FLIGHT & The AIRCRAFT ENGINEER.

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

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EDITORIAL COMMENT.

"Newspapers are an essential part of our war organisation."
(Sir Auckland Geddes, Minister of National Service.

THE terms of the recently-issued announcement of the Air Council with reference to overseas service chevrons are, to put it mildly, most extraordinary. For some reason, known only to the powers that be, it has apparently been decided to deprive officers and men who have served abroad of the only mark that distinguishes them from the thousand and one who have spent the whole of their service—not necessarily unequal in importance—during the war in "cushy" jobs at home. What is at the back of it all we do not profess to know. We are aware of the reasons assigned, but, put plainly, these do not amount to a row of pins. So far as we are able to see, the Air Council has absolutely no case for its decision, while there is every argument against it. It is a decision that is bound to cause the most acute dissatisfaction among the officers and men concerned, and that, apart from anything else, is an aspect of the matter which certainly ought to have been taken into consideration before the step was taken. The *personnel* of the Royal Air Force is being put into a new and distinctive uniform, as originally advocated in "FLIGHT," mainly for the reason, as Major Baird told the House of Commons only the other day, that its *morale* will be improved by the wearing of a dress which at once separates it from those of the other Services. Yet, immediately after taking this decision—which is an absolutely sound and wise one—the Air Council counters it by one that is likely to be gravely prejudicial to the *morale*, which it says it is so anxious to create and preserve.

A Question of Good Faith.

The decision, we repeat, is a foolish one, but it is far more than that. It is a distinct breach of faith as between the Air Council and the *personnel* who are affected by it. First of all, we are not going to argue whether the issue of these chevrons was a good move on the part of the Army Council and the Admiralty. We are quite aware that there are two opinions as to that, but the fact stands out that they *were* issued, and that a great many officers and men of the two older Services qualified for and received them, and have been wearing them as badges of pride for a considerable number of months. Now, to satisfy the caprice of someone in authority, they are to be taken away. In the memorandum of procedure for the constitution of the Royal Air Force it is laid down, among other things, that no officer or man transferring to the R.A.F. from the Navy or Army is to suffer on account of so transferring in pay, pension, decorations or rewards. These active service chevrons are clearly in the nature of rewards for services rendered, and to put the matter plainly, the Air Council has no right, under the terms of its own memorandum, to take them away from officers and men who gained them in another service altogether. What the Council cares to do in the matter of issuing further chevrons for service in the R.A.F. itself is entirely another matter. If it thinks they are meaningless forms of reward, it is entitled to its opinion, and can make whatever regulations it pleases, and, possibly, no one has a right to grumble. But to take away those that have been gained before the Force came into being is *ultra vires* its own ruling.

We can only hope that wiser counsels will prevail, and the objectionable order will be rescinded at once. There is, we know, a lot of very bitter feeling about it, which is obviously detrimental to the *esprit de corps* of the Force, and the sooner that feeling is abated the better. Let the Air Council promptly and gracefully admit that it has made a mistake, and call back the order before that feeling of which we have spoken becomes too greatly accentuated.

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Why Not Bomb Frankfort? Certain of our daily contemporaries are asking the very pertinent question: Why not bomb Frankfort? They rightly point out that we are now bombing consistently the Rhineland cities, and that although Frankfort is well within the range of our squadrons—it is nearer than some which have received attention—Frankfort has been severely left alone lately. There must be a reason for this. Frankfort is one of the principal cities of Germany. It, like the rest of the Rhineland, has its munition factories and its railway junctions. Also, it is a great concentration centre for troops. Yet, so far as memory serves us, not many raid visits have been paid to it. Why? It is surely not because Frankfort is inhabited by a gentler race of Hun than is exported by its sister cities. Its people have gloated with the best of Huns over the destruction and murder their brothers have inflicted upon Belgium and France. They are neither better nor worse than the rest of the loathsome breed which passes for German. Why, then, should they escape a fair share of the well-merited punishment being administered to the others? We cannot say with any certainty, but we can assume a great deal. Frankfort is the headquarters of cosmopolitan finance, and is a city where there are many interests shared by the financial groups of aliens who give us the doubtful benefit of their presence here. These financiers are men of much influence in this as in other countries, and we can quite imagine they would exert every scrap of that undoubtedly powerful influence to save their spiritual and financial home from the attentions of Allied bombing squadrons.

Whether they would succeed in bringing sufficient pressure to bear to achieve their end is best known to those upon whom it is exerted, but people in this country are becoming very suspicious of the motives underlying the tenderness exhibited towards the Hun and his interests. It has become abundantly clear, in connection with the debates on the measure for the internment of enemy aliens, that the latter have an all too large number of friends in high quarters, so that it is quite natural, when a city like Frankfort seems to be specially excluded from our aerial operations, that people should begin to suspect that there is more behind the immunity than meets the eye.

In view of the acute feeling that exists, it would be as well if those in authority would at least say why it is that the principal city of the Rhineland, lying within easy stroke of our air squadrons, is thus left alone. There may be excellent reasons why it is not being attacked, though we should have thought in our innocence that to attack it would produce an excellent effect on the alien financiers who have friends and interests there. If there are really material reasons for what seems an inexplicable immunity, then let us be told what they are.

Air Force Control. In view of a certain amount of misunderstanding regarding the functions of the Air Ministry and certain other Departments of the Government, the Secretary to the Air Ministry has recently issued a memorandum directed to clearing up any want of understanding that may exist. The memorandum is given in full on page 827. There is really nothing in the communication beyond what should have been quite understood from the commencement, but we cannot help remarking upon the closeness with which the organisation now set forth follows the lines laid down as nearest the ideal by this journal at the time it was engaged in its advocacy of a separate Air Service. Long, long ago, we advocated this very organisation, with its division of function, almost as it is set forth in the memorandum. It may be, of course, that nothing we wrote has influenced the organisation of the Air Ministry, and that this is simply another case of "great minds thinking alike." On the other hand, our writings may have been helpful in working out the lines of the new organisation. In either case, we are pleased that it has all worked out as it has.

• • •

Future Air Warfare. Lord Montagu of Beaulieu, writing in the *Daily Mail* the other day, had some rather interesting things to say regarding the development of aviation after the war. Quite rightly, he says that at the moment machines have to be made with only one end in view—the maximum military value. The machine for mail, passenger or freight traffic has yet to be designed, but it goes without saying that a long-distance bomber, with a high-powered engine, could equally carry other forms of freight, human or otherwise. It is, therefore, clear that every nation, after the war, which desires to be provided with pilots and machines for offence and defence must keep a large fleet properly manned ready for the possible sudden attack of an enemy, probably without declaration of war or other notice. Lord Montagu's idea, with which we fully agree, and have in the past advocated, is that the commercial machines of the future must, like a portion of our mercantile marine and our mechanical transport in former peace times, be constructed and maintained with an eye to immediate conversion to warlike purposes when necessary. When the inevitable reductions of expenditure are being considered—reductions which will be vitally necessary if we are to recover from the effects of the huge expenditure on the war—the Royal Air Force must receive special consideration. But, at the same time, commercial aviation will be a necessity if we are to be safeguarded from a most terrible form of invasion, and at first, at any rate, national financial help will be needed.

Agreeing these premises, the question that will fall to be discussed will be found to resolve itself into whether that national financial help is to be given to private enterprises connected with the development of commercial aviation, or whether the Government, will elect to take matters into its own hands. For our own part, we should be dead against anything like a Government monopoly either in aircraft construction or in the development of commercial aviation, for that way lies stagnation in every department. As we have many times pointed out in these columns, all the signs of the times are towards something approaching a Government monopoly. On all sides, we see the

movement in progress for getting things more and more into departmental hands, and unless we are very careful, we shall find, after the war, that the Government has taken all its measures for constituting aviation, both constructional and active, a State monopoly.

Undoubtedly, the best interests both of the State and of the industry which has rendered such signal service to the country in its time of need, would be best served by the plan which Lord Montagu advocates, viz., of constituting what may be called a Royal Flying Reserve, consisting of a large number of machines and pilots actively engaged in the development of commercial aviation, but subsidised by the State, which should have an immediate call upon their services in case of a threat of war. Such a service would of necessity be progressive in its nature, since it would be before everything a business proposition whose primary duty it would be to earn dividends and to develop technically with as much rapidity as possible. It would cost the nation far less than a much smaller number of machines and pilots kept permanently in commission as a fighting force. It would even be infinitely cheaper, if experience of State-owned concerns teaches us anything, than it would be if there were a State monopoly of commercial flying. It is the latter that we are frankly afraid of, because we conceive the intention to be there to make it so. The only way in which this can be made impossible is for the industry to make its plans well ahead, so that, when the time comes to settle what shape things are to take, the people who are interested in making it a Government concern may find themselves faced by accomplished facts. *Verb. sap.*

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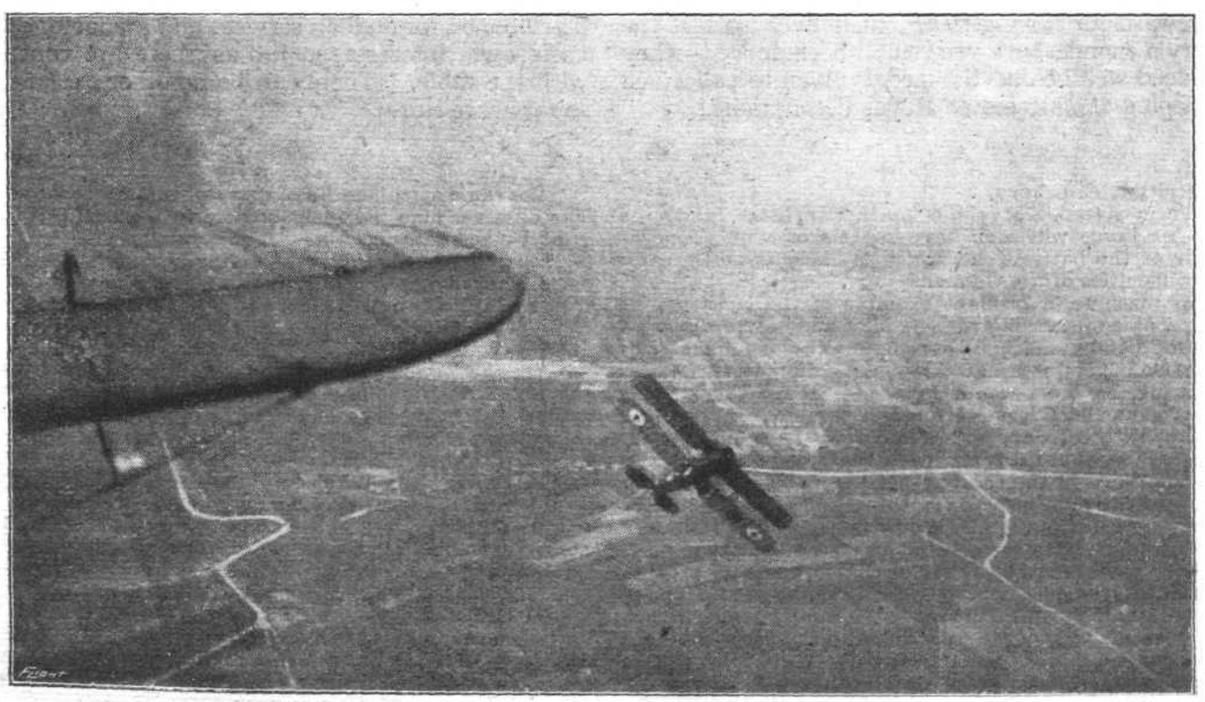
The Transatlantic Flight.

Since we wrote on the subject of the re-opening of the offer of the *Daily Mail* £10,000 prize for a flight across the Atlantic we have examined the original conditions under which the prize was offered for competition, and the way we read them is that it is *ultra vires* the *Mail's* own acceptance of those conditions for it to re-open the prize, except with the consent of the Royal Aero Club, which consent upon first glance does not appear to have been provided for. When we wrote last week we were under the very natural impression that the offer was fully in order and would not have been made unless the necessary preliminaries had first been completed.

It is hardly necessary to point out that the prize cannot be competed for or awarded unless in competition under the auspices of the Club. There is nothing, of course, to prevent the *Daily Mail* from giving any sum of money it likes to the constructor of the first machine to fly the Atlantic, but that is clearly not quite the same thing. The rules laid down by the Club provide that the prize is to go to the *aviator* who shall first cross the Atlantic in an aeroplane in flight. To begin with, it seems fairly clear that if the flight is accomplished this year, or at any time during the war, it will be done by a military machine, flown by a Service pilot, in which case the regulations would preclude the latter from taking a money prize coming from a non-official source. Furthermore, the pilot must be on the competition register of the Club, and that is certainly not the case with the majority of Service aviators now. Again, it seems to us that the strongest argument is provided by the resolution of the Club passed in May of 1916, in which it was decided that the competition in question should not be held during the period of the war. This resolution was arrived at in consultation with the Aero Club of America, and presumably with the approval of the *Daily Mail.*

The effect of these circumstances clearly is that, whatever the *Mail*—whose services to the cause of aviation we fully recognise—may elect to do in the matter of grants of money in connection with a successful flight across the Atlantic, the competition proper certainly cannot be held until the Club's



Ministry of Information.

Machines of a famous fighting squadron in France, manœuvring at 140 miles per hour, on the British Western Front in France. The aeroplane in centre of picture is climbing to its position for battle formation.

embargo is removed. Should the Club agree to re-open the matter well and good, although we think, under present war conditions it would be best to leave the competition where it is and reserve it for a *bonne bouche* for after the war. As to the *Mail's* suddenly re-opening of the offer without first arranging with the one competent authority—that is the Royal Aero Club—which it expressly agreed should take charge of the arrangements, this is an attitude difficult to appreciate. It is a pity the matter has been re-opened in this way, because if persisted in it is a clear blow at the authority of the Club as the body charged by general consent with the conduct and government of the sporting side of aviation. The *Mail* has in the past recognised this authority and has cheerfully submitted to it, and it is to be hoped that they will do nothing now in any way to call adversely into action that authority.

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The Table of Precedence.

Some weeks ago a question was asked in Parliament with regard to the precedence of the multitudinous Orders and decorations which have from time to time been created for the purpose of rewarding services to the State. In answer, it was stated that the whole matter was "under consideration" and that a new table of precedence would be issued shortly. The clear inference that was immediately drawn by most people who recognised the reasons which lay behind the question was that there was to be a re-shuffling of the table which would put matters on their proper basis. The new table has now been issued—and it is enough to make one laugh. As of old, we see that the honours which are gained at the risk of life and limb by our fighting men are still thought less of than those awarded to retired buttermen and those who have waxed fat in safe jobs at home. The Distinguished Service Order, for instance, comes even below the Order of the British Empire, and is not in it with the Victorian Order, while such trifles as the D.S.C. and the Military Cross are among the "also rans." War medals, which are given to fighting men as a reward for having risked their lives against the country's enemies, are very small beer indeed—they are placed well behind the medals given to policemen for keeping the streets at Royal Coronations!

We must admit that we set very little store by Orders and decorations unless these have been won in the field, but at the same time it must be agreed that under our system of Government they are part of the general scheme of things and serve a distinctly useful purpose, so long as they are awarded for real service to the State. Further than that, there are certain Orders which it is a real honour to possess—the system being what it is. On the other hand, there are Orders, particularly those of more recent date, which to say the least confer a great deal less distinction on the recipients. Those of the former class, which includes all the Imperial Orders down to that of the Indian Empire, rightly come first in the table in the order of their respective dates of creation. We then come to the latter class, beginning with the Victorian Order and including all the later creations whose number we have forgotten and down to the last *opera bouffe* affair, the British Empire. In order to preserve the strict proportions, it is doubtless necessary that members of these Orders above the rank of Companion should take precedence of Companions of the D.S.O., but why a C.B.E. who has been given the "honour" simply by nomination and for no particular service should be placed in front of an officer who adds the initials of the D.S.O. to his name passes comprehension. The last is an honour. The other was well summed up by a high official of the late King Edward's household, who, being told by the King that he had given a well-known wholesale tradesman an M.V.O., is said to have replied: "And serves him damned well right, Sir."

And so it is with all the rest of the military and naval decorations, with the one brilliant exception of the Victoria Cross, which is properly placed even before the Garter. Nothing is so unimportant, nothing is too easily gained, that it does not take precedence of medals and decorations gained in the face of the enemy.

We take it the real reason for the anomaly is that those who have the say in these matters are as a rule people who are much decorated and be-ribboned for civilian services and are looking after their own interests so far as these are concerned with the table. There can be no other explanation, so far as we can see.

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New British Bombers.

"IT is stated," says the *Daily Chronicle*, "that the Royal Air Force will soon have swarms of a new type of machine at the battle front, which is likely to add greatly to the difficulties of the Germans.

"This machine, a brilliant example of the constructor's art, is capable of carrying with its pilot and observer a great weight of bombs, machine guns and other equipment, to over 20,000 ft., and in an extraordinarily short time.

"Soaring, as the new machine will, above the average range of guns and German airmen, it can cross the fighting lines, drop its bombs, and return home swiftly for a new load. So fast is it, even at great altitudes, that long distances can be accomplished in the shortest periods, and bombing raids which with the older type of machine would, perhaps, need a whole day's preparation, will now be carried out within a couple of hours. Moreover, what is of the utmost importance, their engines are completely reliable, and the risk that they might fail when a hundred miles over the enemy lines—a risk too common with some earlier types—no longer exists.

"It says much for their supreme value that, so far, not one of this type has been brought down, in spite of the Huns' utmost efforts. When the weather will not permit high flying, as is often the case in the winter, these machines will fly low, and so great is their speed that all but the fastest of modern scouts will be left behind them, as if standing still.

"For these machines the utmost skill and nerve are needed. The observer must not only be able to ward off hostile aircraft by accurate machine-gun fire, but he must also have an expert knowledge of map-reading and aerial navigation, since when flying long distances at great heights it is extremely difficult to find one's way by any landmark."

New Timber Order.

BY the Timber Order, 1918, which was recently issued, the Board of Trade have prepared for the introduction of a rationing scheme for imported soft wood timber, which began last Monday. A schedule of maximum prices for imported timber will be issued, but will not apply to existing stocks, which will still be subject to the previous regulations as to price. Stocks which under previous regulations may not be sold at prices above those ruling on January 31st, 1917, are to be notified to the Controller of Timber Supplies for his decision regarding the price at which they may be sold. The permit system is extended to home-grown converted timber on lines somewhat similar to those which have for over a year applied to imported soft wood. Other matters dealt with include the position of timber on estates which are about to be sold; also sales of timber by auction and by tender. Particulars of the new form of application for permits for home-grown or imported timber may be had on application to the Controller of Timber Supplies, Branch 2, at 80, Newman Street, Oxford Street, London, W. 1.

FLIGHT

HONOURS

Military Medal Awards.

IT was announced in the *London Gazette*, on July 16th, that the King had been pleased to approve of the award of the Military Medal for bravery in the field to the following members of the R.A.F. :—

P. S.4/236974 Sergt. A. S. Allan ; 8794 1st Air-Mech. (A. Corp.) H. A. Barker ; 6947 2nd Air-Mech. F. Bassett ; 401789 2nd Air-Mech. F. R. Berry ; 7467 1st Air-Mech. (A. Corp.) E. R. Bidewell ; 86151 2nd Air-Mech. D. R. Davies ; 43975 2nd Air-Mech. C. F. Fisk ; 56157 2nd Air-Mech. H. Francis ; 49642 Pte. (2nd Air-Mech.) L. C. Gleaves ; 11843 1st Air-Mech. G. M. Haycraft ; 17759 Cpl. H. W. Hill ; 2944 Sergt. H. G. Hoggart ; 10597 Sergt. A. E. Isles ; 51542 1st Air-Mech. J. Keddie ; 8875 1st Air-Mech. O. Kordik ; 10498 2nd Air-Mech. H. G. Lobb ; 58471 2nd Air-Mech. W. E. Miller ; 15735 1st Air-Mech. (A. Corp.) A. W. Ready ; 58887 Sergt. A. Remington ; 8609 1st Air-Mech. (A. Corp.) R. B. Watson ; 12660 1st Air-Mech. A. Williams.

Details of Gallant Deeds.

WITH reference to the awards conferred as announced in the *London Gazette*, dated February 18th, 1918, the following are the statements of service for which the decorations were conferred :—

SECOND LIEUTENANT (T. CAPT.) J. B. MCCUDDEN, D.S.O., M.C., Gen. List, and R.F.C.—He attacked enemy formations, both when leading his patrol and single-handed. By his fearlessness and clever manœuvring, he has brought down 31 enemy machines, 10 of which have fallen in our lines. His pluck and determination have had a marked effect on the efficiency of the squadron.

Distinguished Service Order.

T. CAPTAIN W. G. BARKER, M.C., Gen. List and R.F.C.—When on scouting and patrol work he has on five different occasions brought down and destroyed five enemy aeroplanes and two balloons, though on two of these occasions he was attacked by superior numbers. On each occasion the hostile machines were observed to crash to earth, the wreckage bursting into flames. His splendid example of fearlessness and magnificent leadershlp have been of inestimable value to his squadron.

MAJOR A. D. CARTER, Infy. and R.F.C.—He destroyed two enemy acroplanes, drove down several others out of control, and on two occasions attacked enemy troops from a low altitude. He showed great keenness and dash as a patrol leader.

Bar to the Military Cross.

Sec. Lt. (T. Capt.) C. A. STEVENS, M.C., W. Rid. R. and R.F.C.—For conspicuous gallantry and devotion to duty as a leader of numerous bombing raids. On one occasion he led 10 machines a distance of 130 miles from his aerodrome, obtaining good results During all the raids in which he has acted as leader he has lost only one machine, and he has invariably given a splendid example of skill and courage. His skill and determination have had an admirable influence in his squadron.

The Military Cross.

Lt. F. A. BATES, Yeo. and R.F.C.—He flew over an enemy battery which was firing on our positions, dived on to it and silenced it with his machine guns. He showed splendid courage and resource.

T. Lt. (T. Capt.) J. C. B. FIRTH, Gen. List and R.F.C.—He has on various occasions, during a period of two months, completely destroyed two enemy planes and shot down out of control seven others. The latter, by reason of the manner in which they were observed to go to earth, were probably all rendered useless for further service. He has set a very fine example as a patrol leader, and has displayed much skill and courage.

Sec. Lt. A. C. B. HARRISON, O. and B. L.I. and R.F.C.—He carried out two very successful long-distance photographic reconnaissances under most difficult weather conditions. On one occasion while on a patrol he was attacked by two enemy aeroplanes ; he drove one of them down in a damaged condition and completed his reconnaissance. He has taken part in many bombing raids and photographic reconnaissances, and has set a most valuable example of consistent courage and determination to his squadron.

T. Sec. Lt. (T. Capt.) N. MACMILLAN, Gen. List and R.F.C.—He has shot down in flames three enemy planes, and has driven down out of control six other machines. He has by his skill and courage afforded a magnificent example to all ranks with whom he has come into contact.

Lt. (T. Capt.) J. MITCHELL, R.F.C., Spec. Res.—When on patrol work on four separate occasions he has shot down five enemy planes, three of which were observed to burst into flames, one being a large three-seater. On two of these occasions his formation was attacked by superior formations of the enemy. His magnificent work has been marked by great dash and fearlessness.

T. Sec. Lt. K. B. MONTGOMERY, Gen. List and R.F.C.—He has on several occasions during a period of three months shot down in flames four hostile machines, three of which were large high-powered two-seaters, and has driven down out of control six enemy planes. He is a most determined scout pilot, his skill and courage being of a very high order.

Capt. L. G. S. PAYNE, Suff. R. and R.F.C.—On four occasions he bombed important enemy railway stations, obtaining direct hits on each occasion. He also carried out a long-distance raid on an enemy aerodrome, which he bombed from 1,100 ft., making the return journey at a height of 800 ft. with his machine damaged. He has taken part in many night bombing raids, always at a low altitude, and has set a fine example of determination to all ranks of his squadron.

T. Sec. Lieut. F. G. QUIGLEY, Gen. List and R.F.C.—For conspicuous gallantry and devotion to duty when engaging hostile aircraft. On one occasion, while on patrol, he attacked an enemy two-seater, which, after close fighting and skilful manœuvring, he crashed to the ground. He has within a short period destroyed, or driven down out of control, seven other enemy machines, and on all occasions has displayed high courage and a fine fighting spirit.

Sec. Lieut. (T. Capt.) H. A. SMITH, Middx. R. and R.F.C.—On five separate occasions during raids on points beyond the enemy lines he has found his objectives, although on more than one occasion he was badly hampered by adverse conditions. He drove down one enemy plane out of control and engaged two others with indecisive results owing to the clouds. He has taken part in many bombing raids, and his example of energy and determination has been of the utmost value to his squadron.

Lieut. (T. Capt.) G. T. WILLCOX, High. L.I. and R.F.C.—On five occasions he carried out bombing raids at a low altitude on important enemy railway stations, aerodromes, and other targets, obtaining direct hits on each occasion. He has set a very fine example to his squadron by his gallantry and determination.

Lieut. L. W. SUTHERLAND, Aus. F.C.—He continually carried out difficult reconnaissances and brought in most valuable reports, though he was often attacked by hostile aeroplanes. He showed the greatest initiative and determination.

The Aircraft Workers' Strike.

THE Ministry of Munitions issued the following statement on July 21st :—

It will be remembered that one of the terms of settlement of the London aircraft dispute which arose at the works of the Alliance Aeroplane Co. was the holding of an immediate enquiry into the circumstances leading up to the dismissal of Mr. Rock. This report has now been received.

The Minister, having regard to the terms of the report, has taken the following decisions, which, together with the report, will be immediately communicated to the parties concerned :—

1. In view of the finding contained in paragraph 15 of the report to the effect that Mr. Rock's action in the matter was such misconduct as to warrant the immediate termination of the contract of service between him and the company, and that his dismissal was justified, the Minister considers it his duty, in accordance with the agreement entered into with the responsible trade union officials by which the dispute was settled, to confirm the dismissal of Mr. Rock.

2. The Minister, in furtherance of his decision, will instal immediately a new management of the Alliance Aeroplane Erecting Shop, which will become a national factory.

3. In view of the unrest that the report indicates existed in the works for some time before the strike, the Minister has under consideration the reduction of overtime to be worked.

THE PFALZ SINGLE-SEATER FIGHTER.

160 H.P. MERCEDES ENGINE.

In our issue of April 18th, 1918, we published some photographs and a brief description of the Pfalz single-seater fighter. We have, since then, by the courtesy of the authorities, been permitted to examine in detai , and sketch, one of these machines exhibited at the Enemy Aircraft View Rooms. Owing to the fact that several of these machines have been captured, there is available a great number of parts, so that it has been possible to ascertain the internal construction of practically all the details, many of which are very interesting. As the Pfalz is, constructionally, rather different from the general run of German machines, we propose to devote a considerable space to it, hoping that the information thus conveyed will be found both useful and interesting to all concerned in the production and use of aircraft.—ED.]

As a type the Pfalz belongs to the single-seater fighter class with low-resistance body, which during the last twelve months or so has been given more attention in Germany than ever before. Up till that time German designers had, generally speaking, troubled little about cutting down head resistance on their machines, trusting, presumably, to their high-power water-cooled engines to pull them through. As, however, the machines of the Allies increased in speed and climb it became obvious that something more than mere engine power would be required to cope with the constantly increasing demands, and once this was realised several German firms began to look around for ways and means of improving the performance of their machines. Among these were the Albatros firm, which turned out some single-seater fighters, incorporating the Nieuport type wing bracing and the semi-monocoque body of stream-line shape. It was on machines of this type that the pilots of the "Richthofen Circus" did much of their fighting. Then there was the Roland fighter, in which attempts were also made at stream-lining the body, but which went rather farther and made the body so deep as to serve directly as a support for the top plane. Finally we have the Pfalz, in which stream-lining has been carried a little farther still, inasmuch as the attachment of the lower wings takes the form of wing roots formed integrally with the body and the object of which is presumably to avoid sharp corners at the juncture of wings and body. The wing arrangement of the Pfalz also differs slightly from that of the Albatros in that the inter-plane struts do not come to a point on a single lower spar, but are separate at their lower ends by a short horizontal piece, evidently so as to enable the struts to take care of the twisting moment due to the travel of the c.p. better than can be done with a point attachment.

An examination of the Pfalz biplane gives the impression, also conveyed in the accompanying drawings, of very low resistance indeed, and with an engine of 160 h.p. one naturally expects the machine to have an excellent speed. Tests carried out in this country do not, however, confirm this first impression, and the following particulars of performance can only be regarded as disappointing in view of the promising appearance of the Pfalz, and this is another proof of the difficulty of judging "by eye" the merits or otherwise of a machine.

According to the official report on the tests the following data were established :—

Pfalz Scout, No. G. 141.

Engine	160 h.p. Mercedes.
Number of crew	One.
Military duty	Fighter.
Propeller	Axial, Berlin.
Total military load	281 lbs.
Climb to 10,000 ft.	In 17 mins. 30 secs.
Speed at 10,000 ft.	102½ m.p.h. ; revs., 1,400 r.p.m.
Rate of climb	360 ft./min. ; revs., 1,310 r.p.m.
Climb to 15,000 ft.	In 41 mins. 20 secs.
Speed at 15,000 ft.	91½ m.p.h. ; revs., 1,325 r.p.m.
Rate of climb	100 ft./min. ; revs., 1,280 r.p.m.
Estimated absolute ceiling	17,000 ft.
Greatest height reached	15,000 ft. in 41 mins. 20 secs.

The total military load is made up as follows :—

Pilot	180 lbs.	
Two Spandau guns	70	,,
Dead weight	31	,,
Total	281	,,
Weight per sq. ft.	8·56 lbs.	
Weight per h.p.	12·84	,,
Total weight of machine, fully loaded	2,056 lbs.	
Weight of machine, bare, with water	1,580 lbs.	
Military load, less crew	101	,,
Crew, as above	180	,,
Petrol, 21½ galls.	155	,,
Oil, 4 galls.	40	,,
Total	2,056	,,

The first question that naturally comes to mind after studying this table of performances is, What is the reason for this poor performance, for it can scarcely be termed otherwise. Some of the figures given in the table may help to furnish the solution, although after perusing them there are still several remaining unanswered. For instance, the wing loading is somewhat high, but certainly not so much so as to account by itself for the low maximum speed and low rate of climb. The body appears to be of good streamline form, but against this must be placed the fact that the maximum cross sectional area is comparatively large, owing to the deep body reaching nearly to the top plane. As regards the wing bracing, this is simple enough as far as concerns the *number* of wires and struts, but the cables are not faired, and as they are of rather large diameter, their resistance at maximum speed may reasonably be assumed to be fairly high. If, however, the detrimental resistance is considerable, the wing resistance is probably no less so, the wing section being of the deeply cambered type so favoured by German designers, and which has, generally speaking, a somewhat high drag, although its lift is good. We have for some time held the opinion that German designers were deliberately employing deeply cambered sections with a view to obtaining better performance at altitudes, but we are bound to admit that the official tests of the Pfalz scarcely appear to bear out this contention. We would strongly urge that the authorities have tests carried out at the N.P.L. on all the German wing sections of which data are available, as the publications of the results of such tests would be of the greatest interest. We do not for a moment imagine that the sections would reveal any superiority over those more commonly employed by the Allies, but some interesting facts might nevertheless be brought to light, which might be of use to our own designers, if only as a warning regarding what not to do.

Constructionally the Pfalz single-seater is even more interesting, showing, as it does, considerable departures in detail design from other German makes of the same class, on which its fundamental arrangement is evidently founded. This refers especially to the Albatros fighter single-seater, which is characterised by the same main features, such as large top plane and small bottom plane, one pair of inter-plane Vee struts on each side, ply-wood streamline body, &c. Apart from minor differences in shape, the Pfalz designer has chiefly struck out along original lines in the construction of the body. Whereas in the Albatros one finds the same oval formers connected by longitudinal rails, the manner of applying the three-ply covering is totally different in the two machines. In the Albatros the ply-wood is put on in small pieces covering only a bay or so ; the covering of the Pfalz is in the form of long strips spirally laid on, the strips of the two layers forming an angle with one another.

In Fig. 1 is shown the general arrangement of the Pfalz body. There are in all eight *longerons*, it will be noticed—one at the top, one at the bottom, one half-way up on each side and four at what would be the corners in a rectangular section body. These *longerons* run the whole length of the body, with the exception of the top one, which is terminated just to the rear of the engine, and are attached to the formers as shown in the sketch, Fig. 2. The *longerons* are stop-chamfered so as to leave them solid where occur the formers, into which they are sunk and secured by a wood screw. The formers themselves are built up of smaller pieces of spruce, lap-jointed and covered each side with a facing of three-ply wood.

Reference has already been made to the fact that wing roots are formed integrally with the body. These roots can be seen in the side view, Fig. 1, and account for the peculiar shape of formers III and IV. Judging by these formers the cross-sectional area is unduly increased at this point, although this may be partly made up for by the shape of the ply-wood covering, which merges the lines of the lower plane into the curves of the body. This is illustrated in the two sketches, Fig. 3. It is, perhaps, open to doubt whether or not this elaborate arrangement is worth while. Constructionally it must necessarily entail considerable extra work, and aero-

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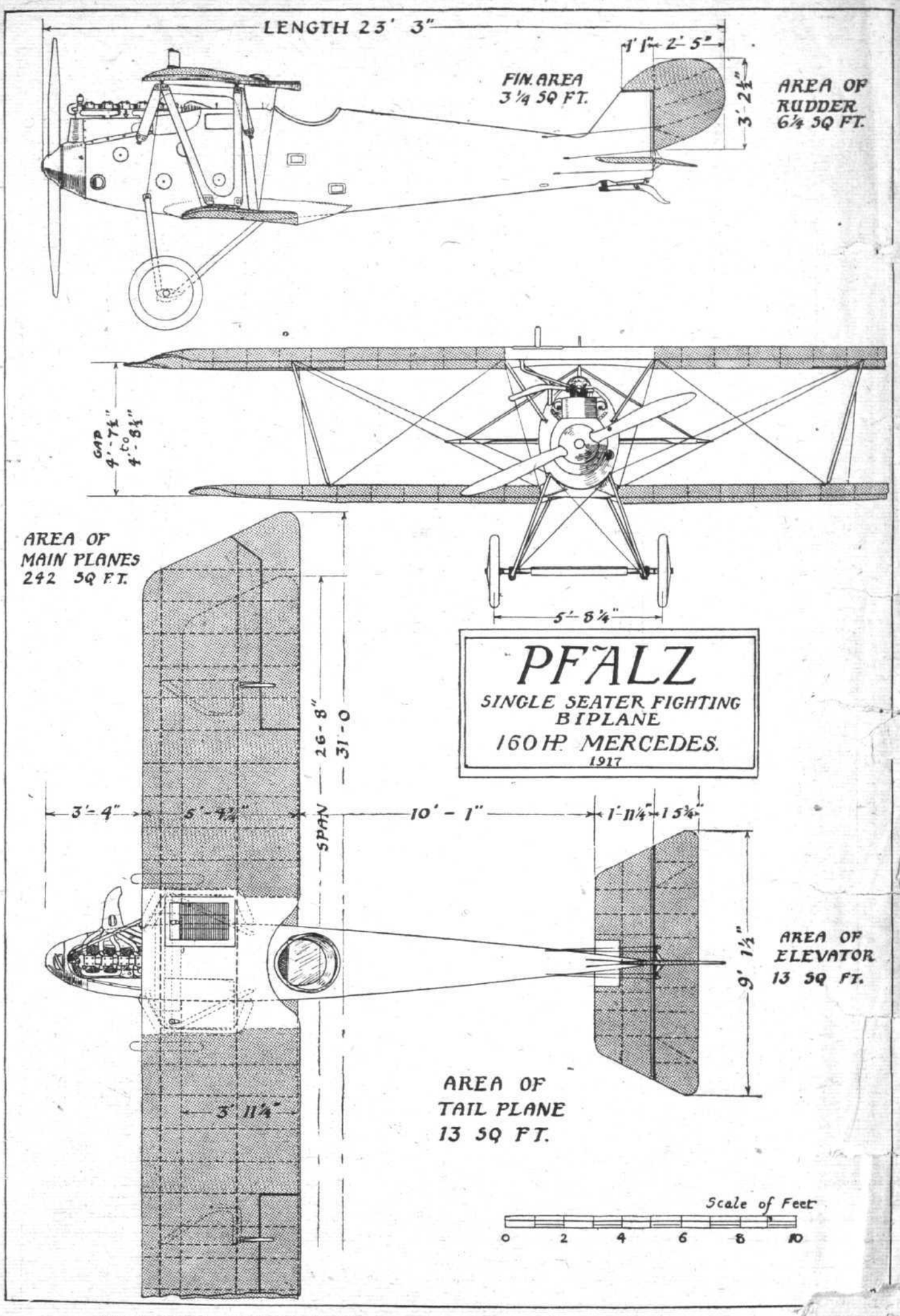

THE PFALZ SINGLE-SEATER FIGHTER.—Plan, side and front elevation to scale

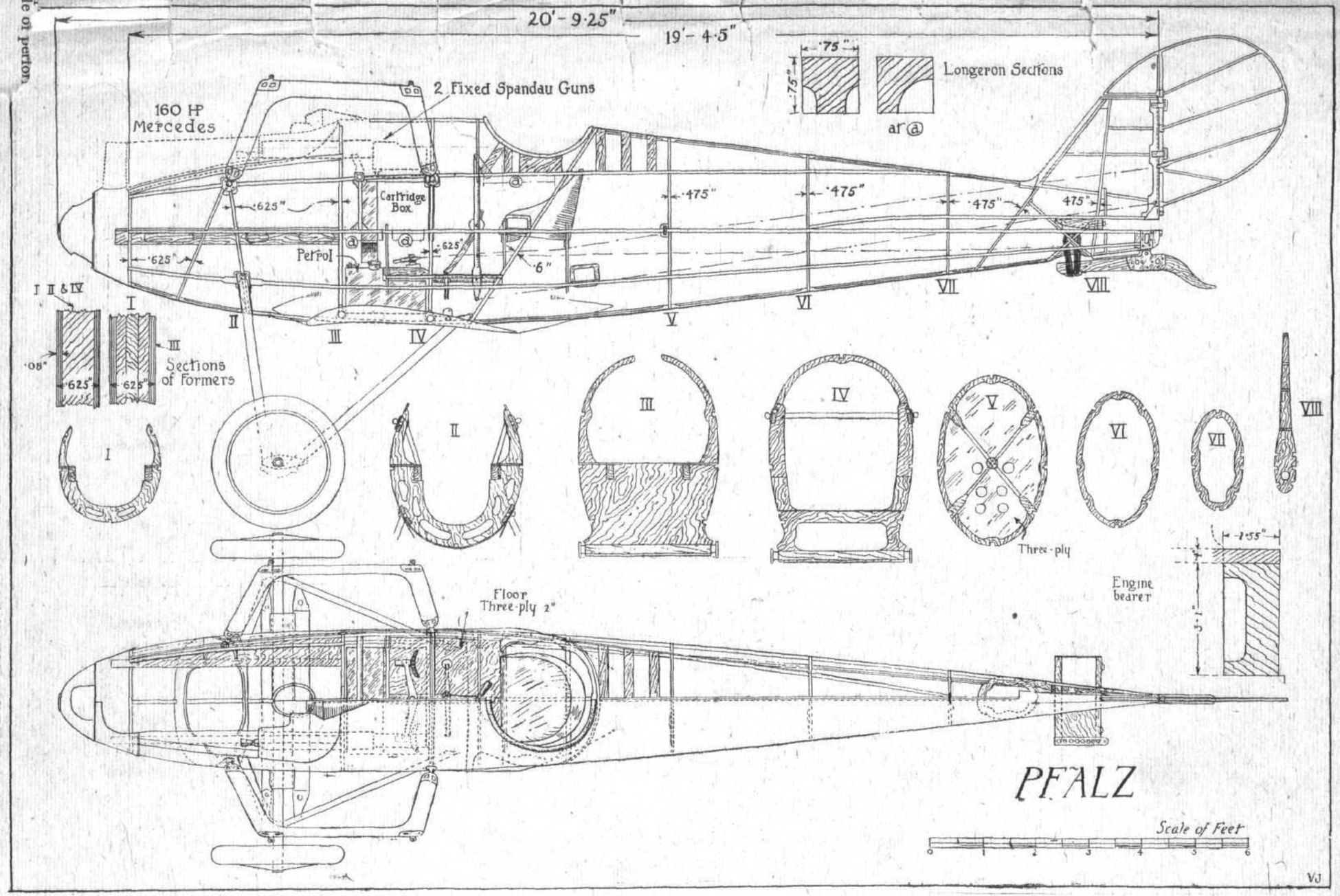

Fig. 1.—Side elevation and plan of the Pfalz body to scale.

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AIRCRAFT ENGINEER

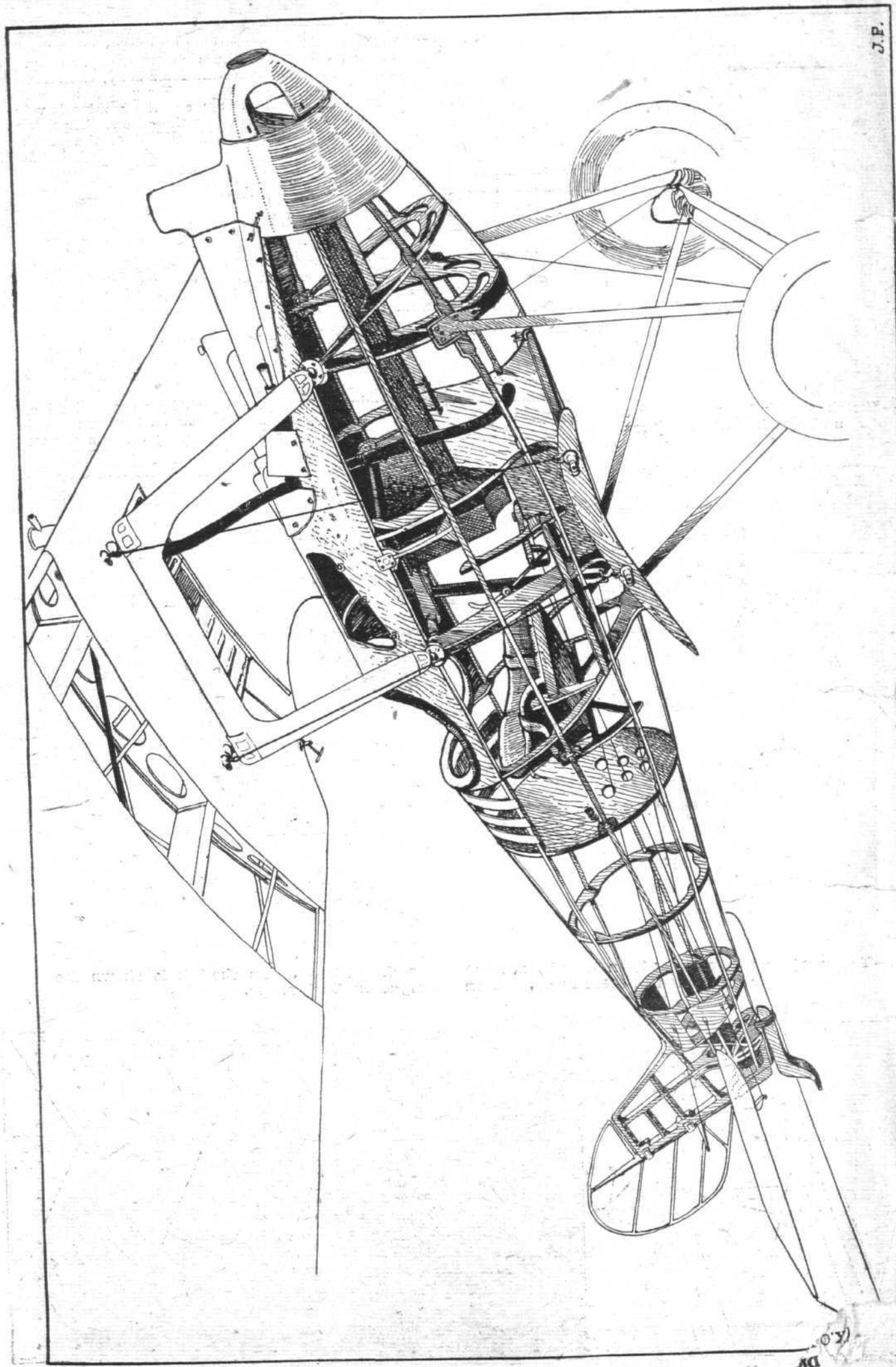


Fig. 4.—Perspective view of the Pfa[illegible] body, stripped of its ply-wood covering.

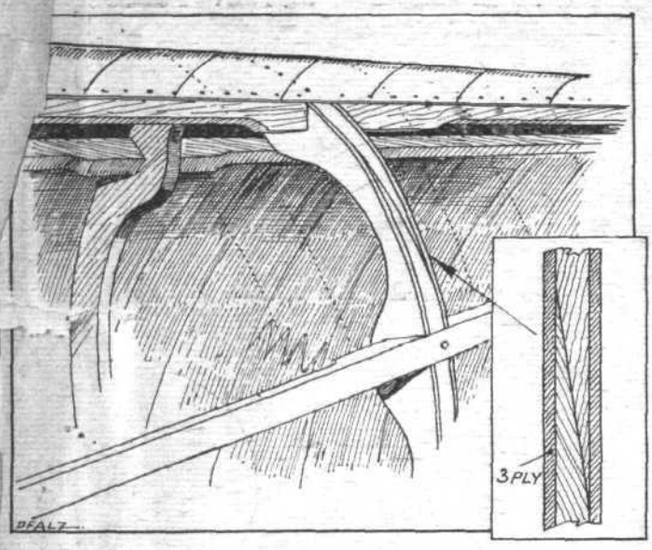


Fig. 2.—Sketch showing construction of body former and attachment of *longeron*.

dynamically it does not look as neat and efficient as the Albatros way of doing the same thing by frankly letting the bottom plane abut directly on the curved sides of the body.

Fig. 4 is a perspective view of the Pfalz body, and serves in conjunction with Fig. 1 to explain the general arrangement of formers and *longerons*. Some of the formers, it will be noticed, are sloped in relation to the others. Thus, for instance, the former in the neighbourhood of the pilot's seat slopes back so as to bring it approximately into line with the rear chassis struts, while rigidity is lent to the front portion of the body by sloping one of the formers carrying the engine bearers until its top meets the top of the next former. In this point also the formers are joined to the front struts carrying the top plane, while one of them serves, at the point of attachment of the bottom corner *longeron*, to transmit the load from the front *chassis* struts.

One of the difficulties of monocoque body construction has always been that you cannot bend three-ply sheet over a double curvature. That is to say, in sheet form the three-ply will bend willingly to the curvature of the converging sides of a flat-sided body; but as soon as the sides are no longer flat but have a curvature, however slight, three-ply in sheet form cannot be employed. In the Albatros this difficulty is overcome by using small sheets, covering only one bay, and forming in reality, although it is not noticeable, a series of straight bays. In the Pfalz a different method has been employed. The body covering consists of two

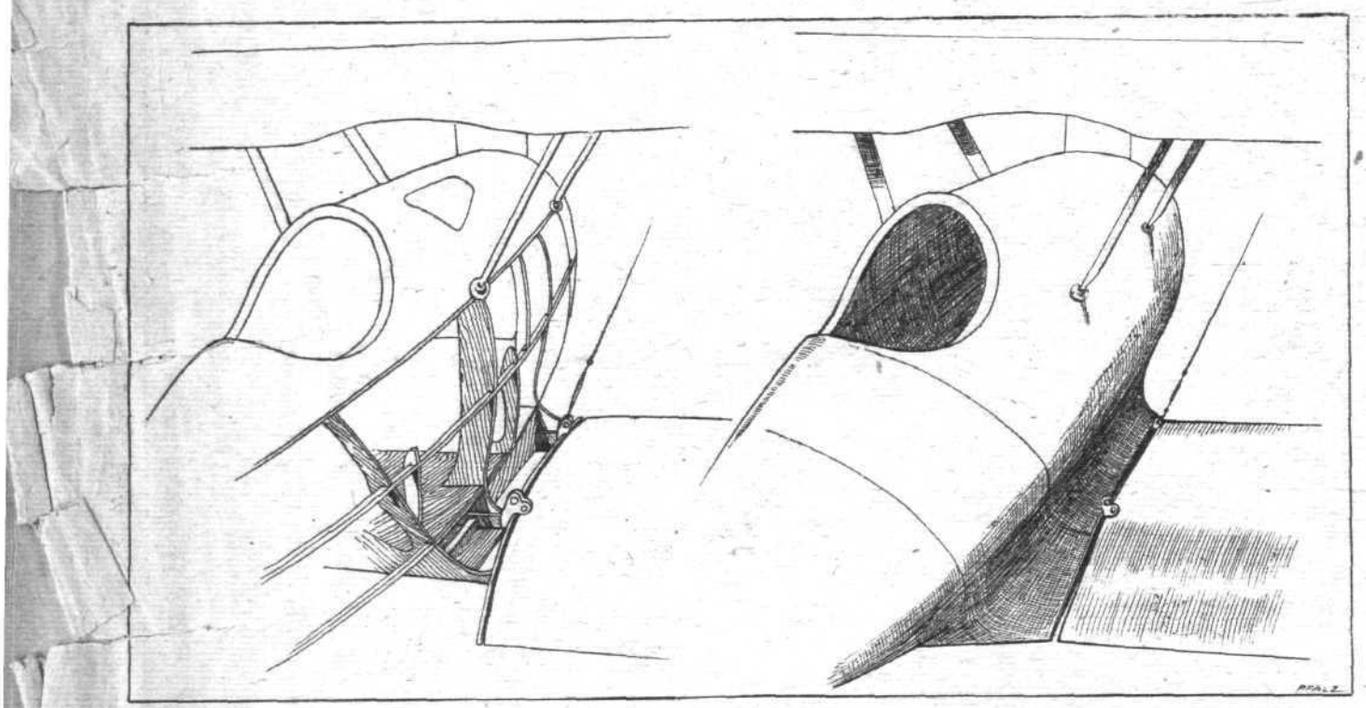
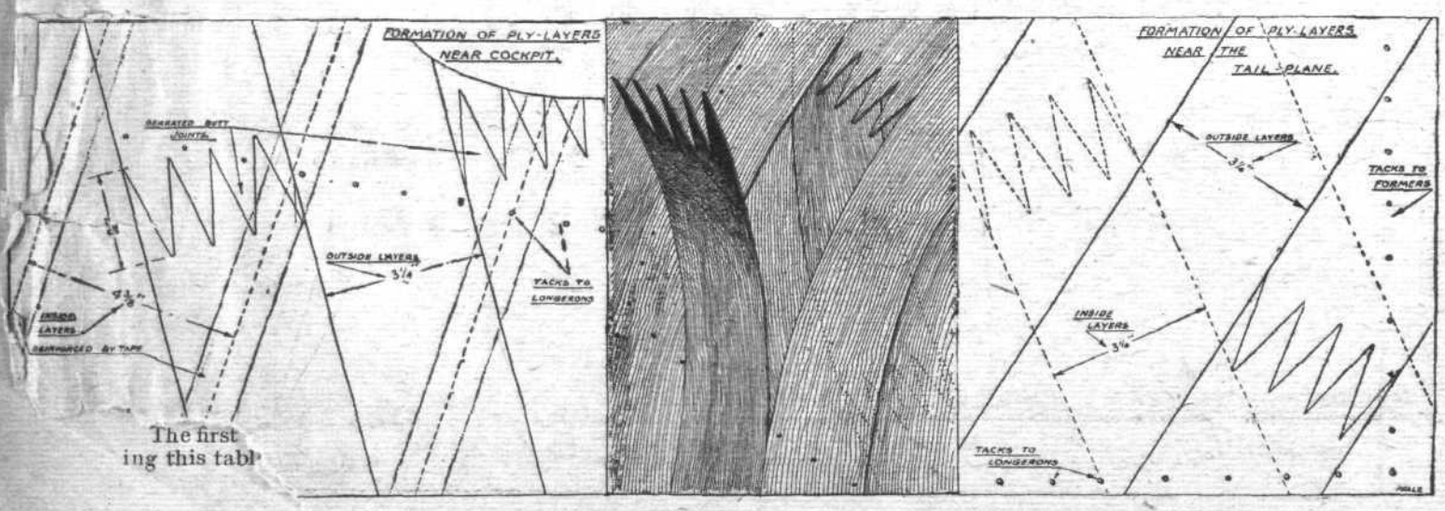


Fig. 3.—The wing roots are formed, on the Pfalz, integrally with the body. On the left is shown the construction of these roots, and on the right the final shape.



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M... s showing method of covering with ply-wood the body of the Pfalz.

layers of three-ply, each less than 1 mm. thick. The ply-wood is evidently manufactured in sheets, and before applying to the body is cut up into parallel strips of about 3 to 4 ins. the width apparently varying considerably throughout the body. The first layer of three-ply is then put on by bending it diagonally around the body, attaching it by tacking to the various *longerons, en route*, and cutting each narrow strip at the top and bottom *longerons*, which form the terminals so to speak of the three-ply covering, which is thus applied in two halves. The second layer of strips is then laid on top of the first, but at a different angle, to which it is secured by glueing, and finally tacked to the *longerons*. The inside layer is reinforced, in the front portion of the body, by glueing tapes over the joint between adjoining strips of ply-wood. This and other details are shown in Fig. 5. In order to spread a joint in the ply-wood over as large an area as possible the joint is made, as shown, in a sort of saw tooth or serrated butt joint style. This, in brief, is the fundamental construction of the Pfalz body, and differs considerably from other makes. As to its efficiency we cannot speak. The weight at any rate, judging from the comparatively low total weight of the machine, can scarcely be any greater than the girder type of body, but as regards strength we have no information. We have heard it said that the Pfalz machines have a habit of breaking their bodies just aft of the pilot's cockpit, but for the accuracy of this statement we cannot vouch. As a compromise between sheet three-ply covering and true monococque construction the Pfalz method would appear to have certain advantages.

(To be continued.)

The Air Ministry.

THE Secretary to the Air Ministry has issued the following communication :—

"There appears to be some uncertainty as to the respective functions of the Air Ministry and certain other departments of His Majesty's Government. The following is accordingly circulated for general information : The Air Ministry was established to take over control of the Royal Air Force, which was formed on April 1st by the amalgamation of the R.N.A.S. and R.F.C. The Ministry supplies to the Admiralty and War Office contingents of the Royal Air Force, which, for purposes of operations by sea and in the various theatres of war, are under the supreme naval or military command. There is also an Independent Air Force operating under the Air Ministry. The actual provision of aeroplanes is the responsibility of the Ministry of Munitions. A special group in this Ministry has been set up to meet the needs of the Air Ministry. Departments dealing with technical development, supply, inspection (usually termed the A.I.D.), contracts, finance, &c., all come within this group. The various addresses are as follows :—

"Supply, Contracts and Finance Departments.—York House, Kingsway.

"Technical Department.—Central House, Kingsway.

"Inspection Department.—Clement's Inn, Strand.

"Lighter-than-air craft remain under the Admiralty, the Air Ministry supplying the personnel from the Royal Air Force. The responsibility for the defence of London against air raids rests with the War Office, the Air Ministry supplying aircraft and personnel for air service in connection with it. In connection with the Air Ministry the following main Committees perform the functions indicated :—

"1. The Advisory Committee for Aeronautics, York House, Kingsway, W.C.2, is engaged on aeronautical research generally and the investigation of the fundamental problems of flight and the subordinate questions to which it gives rise.

"2. The Air Inventions Committee, 2, Clement's Inn, Strand, W.C.2, investigates all inventions submitted by the public on aeronautical subjects and submits to the Technical Department of the Directorate of Aircraft Production those considered worthy of development.

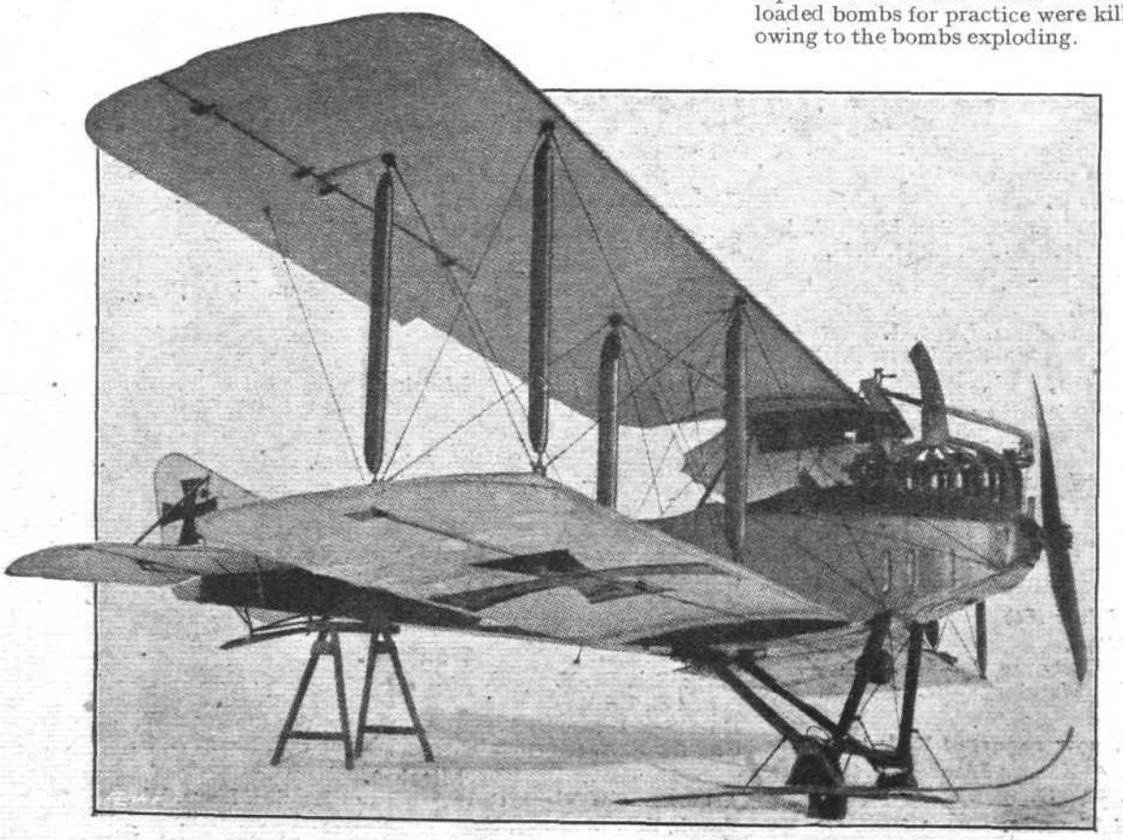
"3. The Accidents Committee, Air Ministry, Strand, W.C.2, makes special investigation into any accidents which require it."

Lieutenant Quentin Roosevelt Killed.

THE hope that Lieut. Quentin Roosevelt, the youngest son of ex-President Roosevelt, was a prisoner has proved to be a vain one. A correspondent of the German Official Agency at the Army Main Headquarters states that an attempt by 12 battle airman to break through the German aerial defence over the Marne "culminated in a duel between Lieut. Roosevelt and a German non-commissioned officer named Greper, who, after a short fight, succeeded in getting a good aim at his 'brave but inexperienced' opponent, whose machine fell, after a few shots, near the village of Chamery, about six miles north of the Marne. Lieut. Quentin Roosevelt had been killed by two shots through the head, and was buried by German airmen, with military honours, at the place where he fell." Lieut. Roosevelt was credited with having brought down a German machine on July 10th in the Château Thierry region.

Another Double Fatality in Sweden.

THE Stockholm correspondent of the *Morning Post* reports that two Swedish officers flying with a charge of loaded bombs for practice were killed off Gothenburg recently owing to the bombs exploding.



For Winter Wear only.—A German biplane fitted with skids instead of wheels for starting from and landing on the snow.

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THE ROYAL AERO CLUB OF THE U.K.

OFFICIAL NOTICES TO MEMBERS.

THE FLYING SERVICES FUND

(Registered under the War Charities Act, 1916).

Honorary Treasurer:

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The Lords Commissioners of the Admiralty and the Army Council having signified their approval, THE ROYAL AERO CLUB has instituted and is administering this Fund for the benefit of Officers, Non-Commissioned Officers and Men of the Royal Air Forces who are incapacitated on active service, and for the widows and dependants of those who are killed.

Subscriptions.

	£	s.	d.
Total subscriptions received to July 16th, 1918	12,790	4	0
Fees received by the Jury, Witnesses, and Medical Officer who attended the inquest on the late Flight Cadet J. L. Smith ..	1	10	0
Total, July 23rd, 1918	12,791	14	0

Offices: THE ROYAL AERO CLUB,
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H. E. PERRIN, Secretary.

THE ROLL OF HONOUR

(Where an Officer is seconded from the Army, his unit is shown in brackets.)

Published July 3rd.

Previously Missing, now reported Killed.

Billings, Sec. Lieut. H. B. (R.F.C.).

Published July 8th.

Accidentally Killed.

Paterson, Lieut. J. H. (I.A.R.O.).

Published July 16th.

Believed Wounded and Prisoner.

Bott, Capt. A. J. (R.G.A., S.R.).

Missing.

Archibald, Sec. Lieut. W. R.
Bartlett, Lieut. A. F.
Belgrave, Capt. J. D., M.C. (O. and B. L.I.).
Brown, Lieut. E. M.
Brown, Sec. Lieut. J. L.
Cocking, Sec. Lieut. L. G.
Fulton, Sec. Lieut J.
Gordon, Sec. Lieut. C. A. (Yorks and Lancs R.).
Gray, Sec. Lieut. G. M.
Legge, Sec. Lieut. W.
Lewis, Sec. Lieut. R. G.
McKenzie, Sec. Lieut. A.
McLeod, Lieut. G. D.
Nicholas, Sec. Lieut. E. M.
Robinson, Lieut. J. C.
Sheldon, Lieut. C. S.
Steele, Sec. Lieut. T. L.
Thompson, Sec. Lieut. G. F.
Weaver, Capt. J.
Webster, Lieut. J.

Prisoners.

Bankes, Lieut. H. V. N. (R.E.).
Fitzgibbon, Sec. Lieut. C. J.
Ratliff, Sec. Lieut. P. G.

Published July 17th.

Killed.

Cox, Sec. Lieut. W. J.
Harvey, Sec. Lieut. C. A.
Gitsham, Lieut. J.
Pemble, Sec. Lieut. F. P.

Wounded.

Cullen, Sec. Lieut. R. J. (Black Watch).
Forsyth, Lieut. J. C., M.C. (Royal Highrs.).
Harman, Lieut. C. W.
McNeaney, Sec. Lieut. J. H.
Power, Sec. Lieut. H. E. (E. Surr.).
Whitmarsh, Sec. Lieut. J. W.
Wilson, Lieut. E. B.

Missing.

Austin, Lieut. H.
Garrett, Lieut. A. L.
Jenyns, Sec. Lieut. C. G.
McMillan, Lieut. C. McW.

Published July 18th

Killed.

Fennell, Sec. Lieut. F.
Gatecliff, Sec. Lieut. J. N.
Millar, Lieut. D.
Osborne, Sec. Lieut. G. W.
Watkins, Capt. L. P., M.C.

Previously Missing, now reported Killed.

Holt, Sec. Lt. J. L. (R.F.C.).
Hale, Sec. Lt. R. E. (R.A.C.).
Knaggs, Lieut. K. J. (R.War. R., attd. R.F.C.).

Died of Wounds.

(K.O.Y.L.I.).

Died.

Alderson, Maj. R. L.
Bartley, Sec. Lieut. R. V. (Aus. F.C.).
Thompson, Lieut. G. R. (Aus. F.C.).
Willis, Maj. E.

Wounded.

Court, Sec. Lieut. L. S.
Gibson, Sec. Lieut. J. W.
Goddard, Sec. Lieut. H. G.
Howitt, Lieut. D. H.
Kennedy, Sec. Lt. N. D. K.
McGregor, Lieut. A.
Reynolds, Lt. H. E. A. (Suff.).
Sanders, Lieut. H.
Wridgway, Sec. Lieut. C. W. (Middx.).

Missing.

Boe, Sec. Lt. D. (Sher. For.).
Borden, Sec. Lieut. H. H.
Dobeson, Lieut. G. E.
Eaton, Lieut. C.
Lindley, Lieut. B. L., M.C.
Pilling, Sec. Lieut. J. E. (King's L'pool, T.F.).
Puckridge, Capt. H.V. (King's Shrops. L.I.).
Sherwood, Lieut. C. L. A.
Story, Sec. Lieut. L. C.
Sydie, Lieut. J. E.
Tatnall, Sec. Lieut. E. W.
West, Sec. Lieut. J. P.
Whyte, Sec. Lieut. R. P.

Published July 20th.

Killed.

Crone, Sec. Lieut. L.
Fitzgerald, Lt. R. J., M.C. (Glouc.).
Hull Lieut. E. P. J.
Messenger Sec. Lt. L. W. (R.F.A.).

Previously Missing, now reported Killed.

Clark, Lieut. N. (R.F.A.).

Died.

Balls, Lieut. F. W. (Suff.).

Wounded.

Cripps, Sec. Lieut. A. J.
Daly, Lieut. L.
MacBean, Lt. I. B. (King Edward's Horse).
Nicol, Lieut. W. G. D. H.
Palmer, Capt. S. J.
Perks, Sec. Lieut. J. W.

Missing.

Castle, Lieut. G. L. (R.F.A.).
Davidson, Lieut. B. T.
Harrison, Lieut. A. H.
McCreary, Lieut. H. C.

Published July 22nd.

Killed.

Adams, Lieut. H. W.
Barker, P.F.O. W. S. G.
Barwick, Sec. Lt. R. L. C.
Burree, Sec. Lieut. S. A.
Hand, Sec. Lieut. P. A.
McAllister, Sec. Lieut. A. J.
Sparks, Sec. Lieut. S. W.

Died.

Bradley, Lieut. W. R. (W. Riding Regt.).

Wounded.

Clark, Sec. Lt. F. W. P. (Ox. and B. L.I.).
Dew, Sec. Lieut. E. A.
Gill, Lt. F. A. (Northants).
Morey, Lieut. G. W.
Pryce, Lieut. H. E.
Sweny, Sec Lieut. G. W.
Wilson, Sec. Lieut. A. E.

Missing.

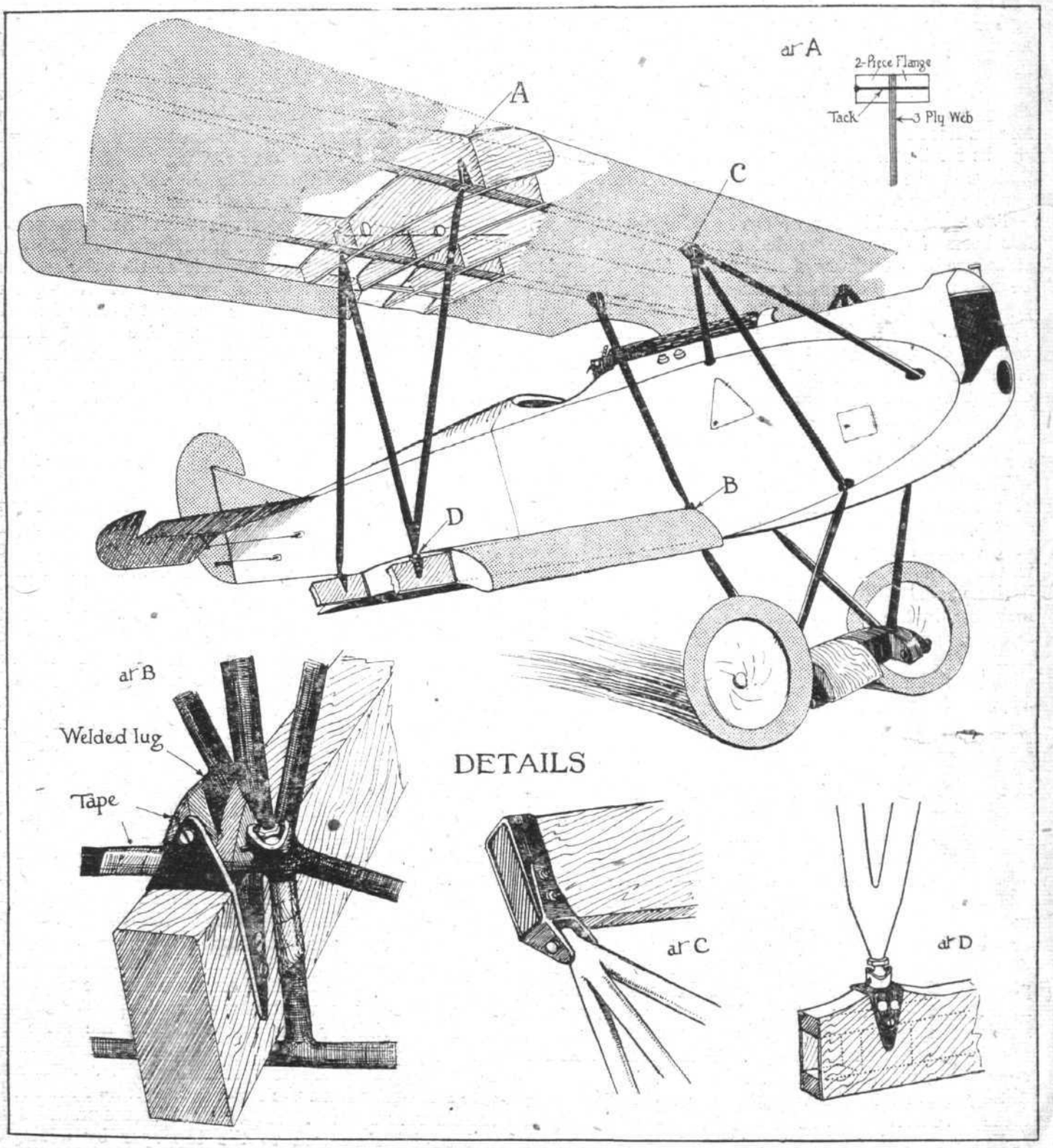
Atkinson, Sec. Lieut. C. H.
Frank, Sec. Lieut. H. R.
Fricker, Lieut. A. J.
Knowles, Sec. Lieut. W.
McKay, Lieut. J. T.
Sutherland, Sec. Lt. A. M.

FLIGHT

A FOKKER BIPLANE OF RECENT TYPE.

ONE of the most interesting additions to the rapidly growing collection at the Enemy Aircraft View Rooms is a Fokker biplane of the D VII type, built, according to a pencilled date on one of the wing spars, in April of this year. The date is 24, IV, 18. The machine is thus one of the most recent to be exhibited, and is of interest on that account, as well as because of the originality of its design. Except for the fact that it is a biplane, the new Fokker product is very similar to the triplane described in our columns recently. The body construction is the same, and the "wireless" wing design is very similar to that of the Fokker triplane. There is one notable departure, however; the engine fitted has evidently been a stationary water-cooled one, probably a 180 Mercedes.

The body of the Fokker biplane is built throughout of steel tubing, the method of joining the struts and cross members to the corner rails being the same as in the Fokker triplane, and the tubular quadrants serving as an anchorage for the cross-bracing wires being also exactly of the same type as in the previous machine. The wire bracing, as before, is simply



THREE-QUARTER FRONT VIEW OF THE FOKKER BIPLANE, TYPE D VII.—In the machine captured the wings have been somewhat badly damaged, and it has not, therefore, been possible to represent exactly the shape of the wing tips. The upper plane has probably been approximately as shown in the drawing, but of the lower wing sufficient did not remain intact from which to reconstruct the shape of the tip. The unusual strutting of the top plane should be noticed. Inset are some constructional d

doubled over the terminals, and only a single strainer being employed in each double wire. The tail plane and elevator are similar in shape and construction to those of the triplane, to the description of which we would refer our readers for details. The rudder is balanced, as in the triplane, but is preceded by a triangular vertical fin, which has probably been necessitated by the larger water-cooled engine, which gives a deeper body in front. The vertical fin is chiefly remarkable on account of the fact that it has its front attachment slightly off-set to the left, probably to counteract the tendency, caused by the torque, to turn to the left.

The pilot's seat is similar to that of the triplane, and is provided with the same wing nuts for quickly adjusting its height to suit individual pilots. In the machine exhibited, the control lever is missing, but from the parts remaining in place it would appear that there has been a forked lever pivoted on a longitudinal rocking shaft, which in turn carried the cranks for the *aileron* control cables, which pass over pulleys in the top plane in the manner illustrated in our description of the triplane.

The engine, which, as we have already pointed out, has been of the water-cooled type, is mounted on a structure built entirely of steel tubes. The two engine bearers are large diameter tubes, supported from the corner rails by small diameter tubes apparently of very light gauge. The tanks are placed immediately behind the engine, the right-hand compartment of the large main tank carrying the oil, and the left-hand compartment the petrol. A Vee-type radiator of honeycomb formation is built into the nose of the body, and is provided on the inside with a shutter for adjusting the cooling.

The under carriage is of very similar design to that of the triplane, the axle being enclosed in a wing section of three-ply wood. The shock absorbers are of the spiral spring type, and are covered in by a woven casing. A feature of the Fokker construction, both as exemplified in the triplane and in the present machine, is the large amount of welding employed, and the manner of employing it. After an examination of the biplane, one is apt to come to the conclusion that the designer of the Fokker biplane places implicit faith in his welders, and, we are bound to admit, with very good cause. The welding is excellently done throughout the machine, but the way the designer has seen fit to employ the welded joints is not above criticism. Thus, on examining the under-carriage, one finds that the lug—a simple forked arrangement—to which the cross bracing cables of the front bay are attached, is simply welded to the wall of the chassis strut without any internal reinforcement. The result, as regards one of the lugs, has been that in the shock of landing the lug has pulled out bodily a large triangle of the strut wall. The welded joint itself has remained intact, but it appears probable that the welding process has weakened the metal of the strut wall so that under the sudden stress of a rough landing this part gave way first, leaving the joint itself intact. This speaks well for the welder, but less so for the designer.

With regard to the wings of the Fokker biplane, these have been designed on the " wireless " principle, as in the case of the triplane. There is this difference, however, that whereas in the triplane the two spars were placed so close together as to form a single box, they are quite separate in the biplane, owing, no doubt, to the greater chord, which with its consequent greater travel of the centre of pressure, made it necessary to place the spars farther apart than could conveniently be done with the single-box arrangement. Each of the spars is built up of spruce flanges, connected on front and rear faces by three-ply webs, the whole forming a box. Both spars taper in a vertical as well as in a horizontal plane. The spars of the upper wing are of uniform width and depth over the portion between the body struts, and taper, from the point of attachment of these struts, to the wing tip, both in front elevation and in plan. The lower wing spars are of uniform section for the width of the body, and hence taper with a straight taper to the tips. The wing section appears to be similar to, but an enlarged edition of, that employed in the triplane. It is extremely deep compared with any modern standard, about 9½ ins. being the maximum thickness of the top plane. The bottom plane, which is of smaller chord, appears to be a geometrical reduction of the top one, and is of considerably smaller chord. The actual dimensions have not yet been ascertained, as the machine in question is very considerably damaged, but we hope to refer to it in more detail at a later date. As far as can be ascertained at present, the chord of both wings was uniform from root to tip, which fact would appear to indicate that the section from point to point varies from one of very great depth and thickness in the centre to one of more orthodox section near the tips. The aerodynamic effect of this would be of interest, and we cannot in this connection refrain from again urging, as we have repeatedly done in the past, the advisability of having tests made on all available enemy aerofoil sections and the results published. A section like the Fokker is not generally credited with any very high efficiency, but the mere fact that it has been retained in a design, examples of which have been built not more than three months ago, would certainly appear to indicate that it has not been found in practice to be so inferior as to outweigh any other advantages that may attend its employment.

The wing ribs of the Fokker biplane are somewhat similar to those of the triplane, but a difference was noticed in the construction of the flanges In the triplane the thin three-ply web was accommodated in a narrow groove in the top and bottom flanges, but so narrow was the web that quite 50 per cent. of the tacks missed the web altogether and simply served to weaken the flanges. In the biplane it is not, therefore, surprising to find that an attempt has been made to eliminate this defect. This attempt has taken the form of the employment of a two-piece flange instead of the old grooved one-piece flange. Instead of vertical tacks the two halves of the two-piece flanges are held together and to the thin web by transverse tacks driven through alternately from right and left, and riveted over.

The manner of supporting the top plane is somewhat different from the method employed in the triplane. No wire bracing whatever is used, the necessary transverse rigidity being provided by the arrangement of the body struts. Sloping outwards from the body is a system of struts, all stream line steel tubes. One strut runs from the lower corner rail of the body to the rear spar. A set of three struts unite in a welded joint secured to the top spar by a single bolt. Each of these three struts is welded to a portion of the body, so that when the top plane is removed, a pyramid of steel tubes remains in place on the body, sloping upwards and outwards from the

sides. The front one of these struts is welded to the tubular engine bearer, projecting through an opening in the metal body covering. The middle strut is welded to the bottom corner rail at the point where is attached the front strut of the undercarriage, and the third strut is also welded to the bottom corner rail, or, more correctly speaking, to a rail running above the spars of the lower wing, at the point where it is crossed by the front spar. The upper front spar is thus rigidly secured, whereas provision has been made for an adjustment of the angle of incidence by fitting into the end of the strut running from the rear spar to the lower body rail a threaded eye bolt fitting into a socket on the lower rail. Incidentally it might be mentioned in this connection that the upper plane is marked "Anstellwinkel 0°" (angle of incidence 0°.) Whether or not the bottom plane is also set at no angle of incidence we have not yet been able to ascertain. The mounting of the bottom plane is slightly different to that of the bottom plane of the triplane. In the latter provision was made for a slight adjustment of the angle of incidence, but in the biplane no such arrangement is to be found, the spars being rigidly attached to the body corner rails.

Only one pair of inter-plane struts connect the upper and lower wings on each side. These are in the form of an N, the joints between the members being welded. The joints between the legs of the N and the wing spars are in the form of ball and socket joints, those for the front top spar and rear bottom spar being fixed, while threaded bolts screwed into the end of the struts meeting the upper rear and lower front spars provide means for adjusting the incidence. No lift or landing wires are fitted, the deep spars being relied upon to resist the bending moments without external aid. Internally the wings are drift-wired with solid circular section steel wire, of heavy gauge, but not in duplicate. It was noticed that one of the lugs to which a drift wire was attached had sheared through, but we should hesitate to say that this necessarily indicates that here was a weak point regarded from the point of view of flying stresses, as the wing had evidently been badly damaged by the machine turning over on landing.

The armament of the Fokker biplane consists of two Spandau guns mounted on top of the body and synchronised in the usual manner to fire "through" the propeller.

As regards the covering of the Fokker biplane this is chiefly remarkable, in the specimen under review, on account of the colours in which it is painted. The front portion of the body and the top surface of the top plane are painted a deep vermilion, while the rear portion of the body is painted white. The lower surfaces of the top plane and the bottom plane are camouflaged in the usual German manner by a printing in different colours of lozenge-shaped figures.

The tail plane and elevator are painted black, with the exception of a parallel portion of the top surface, which is painted white like the body.

As already mentioned one of the wing spars bears the date 24.IV.18, and another spar is branded "Gebr. Perzius, Flugzeug Abteilung." Painted in red stencil on the rear face of the bottom spar is the wording D VII Fl. No. 1450.

See p 1109

▣ ▣ ▣ ▣

"X" AIRCRAFT RAIDS.

"X 98" Raid (July 18th).

THE following *communiqué* was issued by the General Officer Commanding-in-Chief the Forces in Great Britain at 7 p.m., July 18th :—

"A hostile aeroplane flying at a great altitude appeared over Thanet about 6.30 p.m. Fire was opened on the machine, which at once turned east and proceeded to sea."

"X 99" Raid (July 20th).

THE following *communiqué* was issued by the General Officer Commanding-in-Chief the Forces in Great Britain at 10.30 a.m., July 20th :—

"A hostile aeroplane flying at a great altitude crossed the Kentish coast at 9.25 a.m. On fire being opened the machine at once turned eastward and proceeded to sea."

▣ ▣ ▣ ▣

The Raid on Tondern.

WITH regard to the raid on the airship sheds at Tondern, regarding which an Admiralty *communiqué* appears on p. 842, the *Ribe Stiftstidende* states that two Zeppelins were destroyed, and it is also believed that a great ammunition dump was blown up. One British machine landed near Bramminge, another landed not far away, and the third near Klegod, the pilots being interned at Esbjerg.

London's Chair of Aviation.

AT the meeting of the Senate of University College, on July 17th, the generous offer made by Sir Basil Zaharoff, through the Air Ministry, to provide a sum of £25,000 for the establishment of a Chair of Aviation, was accepted with cordial thanks, and steps were taken to secure a speedy appointment to the post.

To R.A.F. Sports Secretaries.

SECRETARIES and committees who are organising sports in connection with the R.A.F., are asked to note that, whenever possible, "FLIGHT" is willing to lend its aid, photographically and otherwise, to making these meetings a success. As lengthy notice as possible should be given of forthcoming fixtures. Results for publication should be sent immediately after the event to the Editor, "FLIGHT," 36, Great Queen Street, Kingsway, W.C.2.

Attempted Raid on Paris.

THE following official statement was issued in Paris on July 19th :—

"Last night a few enemy aeroplanes made for the Paris district. The defence forces were brought into action, and our batteries opened fire. The warning was given at 11.58 p.m. and the 'All Clear' sounded at 12.40 a.m."

Back from Germany.

THE following, who were prisoners in Germany, have arrived in Holland for internment :—

2202 S. Attwater, R.F.C. ; 1840 D. McMaster, R.F.C.

British Pilot's Escape from Germany.

SEC. LIEUT. ROBERT GRECHAN CARR, R.A.F., son of Mr. Robert Carr, of Berwick, who was taken prisoner by the enemy on June 21st when over the German lines, has escaped and rejoined his unit. He was gazetted a year ago, on his eighteenth birthday.

German Story of Raiding during June.

ACCORDING to a Berlin telegram 33 air attacks took place during June on the German homeland, of which 12 were against the Alsace-Lorraine and Luxembourg industrial districts, 4 against the Dillingen and Saar region, 3 against Saarbrücken and Karlsruhe, and 1 each against Offenburg, Ludwigshafen, Landau, Mannheim, Coblenz, Trèves and other places in the Rhine district.

The telegram admits "slight damage" to a blast furnace in the Saar region and to works at Ludwigshafen, and says that the damage to private houses in several towns is not inconsiderable.

Altogether 34 persons were killed, 37 severely and 35 slightly injured.

AIRISMS FROM THE FOUR WINDS

IT is astonishing how quickly self-preservation and necessity teach the oppressed human to adapt himself to the application of modern means of salvation. This time it is the Jugo-Slav propagandists who are taking advantage of the aeroplane for their ends. And very efficacious is it proving, if reports can be relied upon. The one thing that is vital in this direction is the conveyance to their brother nationals in the Austrian Empire, information as to what is being done in the outer world in furtherance of their aspirations, and thus induce them to continue the struggle for their liberty and independence. Thus from time to time Italian aeroplanes fly over the towns of Carniola, dropping leaflets containing the Jugo-Slav proclamation signed by Dr. Trumbish, together with the resolutions of the congress held in Rome a short time ago. When recently Agram was favoured by a visitation of this sort, the people at first thought the leaflets showered down were appeals to subscribe to the Austrian war loan, and evinced no eagerness to possess themselves of the descending literature, though, when the true character of the missives was discovered, more interest was aroused and a greater desire shown to obtain the falling papers. The Austrian authorities are much perplexed by this method of flouting the Press censor, and naturally every endeavour is made to keep the prescribed leaflets from the populace. These efforts notwithstanding, a large number get into circulation, and do much to embarrass the rulers of the "ramshackle empire."

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AN urgent appeal is made to relations of R.A.F. officers by Lady Henderson, on behalf of the R.A.F. Aid Committee and R.A.F. Prisoners Fund, to come forward as workers or helpers to pack parcels for R.A.F. prisoners. Communications should be made direct to Lady Henderson at Surrey House, Marble Arch, W.1; Telephone: Paddington 604.

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MAJOR MILLAR last week completed his second recruiting tour in the South African Union for the Aviation Corps, and has collected some 1,300, said to be the pick of South African youth.

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As time in the War goes, not so very long ago the *Cologne Gazette* was gloating over the troubles in England, arising out of the bombing by Hun air-squadrons. We quoted some of their pious remarks at the time, and said how we should watch with interest for their altered views—when the Cologners tasted of their own medicine. As we anticipated they would, they have now very considerably moderated their belief in good coming out of these "Kultured" tactics, as invented and applied by the Hun barbarians, and have been giving voice to their chastened views accordingly. Indeed, by the *Cologne Gazette's* latest whine they appear to be really shocked at the British depravity which has positively ventured to retaliate. "On the first air-raid on London," writes our contemporary, "Lloyd George said that England would not reply in kind, as attacks on defenceless people were contrary to the national character. To-day, attacks of this kind form an important part of England's programme, and are openly boasted of."

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WHICH proves once more that even a worm will turn at last. Perhaps there is no equivalent to this rule in German "Kultur," and therefore they could hardly realise that, at long last, we really should, you know, get quite vexed, you know, if these raiding stunts continued. And now the long-suffering worm has grown up quite a healthy chap, and looks like developing into a really robust and fearsome avenger, with coils as elastic and as powerful as a full-grown boa-constrictor. But Cologne has hardly felt the tightening squeeze yet. That's a pleasure to come.

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IT is but nine years ago to-day—July 25th—that Louis Blériot flew the Channel on his monoplane. And now there is every possibility of a similar episode across the Atlantic!

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"HERTS school children," says the *Dublin Herald*, "have killed two-hundred-and-seventeen wasps at twopence each." At least two hundred others were driven down in a damaged condition.—*Charivaria*.

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A TEXAS airman at the front has succeeded in lassoing a wolf. This is the latest way of "looping" the "loup."—*London Opinion*.

- - -

A CHATHAM baby has been christened "Gotha." Hardly a happy idea. It suggests a plane child.—*Whipped Topics*.

Ministry of Information.

Pilots of a renowned R.A.F. Scouting Squadron which has done good work on the British Western Front in France.

IRVIN COBB, the star American war-correspondent, whose dry humour some of our readers may remember in "The Red Glutton" (a moving account of his experiences as a captive behind the German lines at the outset of war), cannot keep away from the front. We quote from one of a series of articles which he is writing for the *Saturday Evening Post*:—

"In fine weather, the flying craft rest in the landing field, all slick and groomed and polished, like a landed proprietor's blooded stock, giving off flashes from aluminium and varnish and steel and deft cabinet work in answer to the caresses of the sunshine. Right here I am reminded that the temperamental differences of the Allied nations are shown most aptly, I think, in the fashion in which the aviators decorate their gorgeous pets. Upon its planes, of course, each bears the distinguishing mark of the country to which it belongs; but the bodies are the property, so to speak, of the individual fliers, to be treated according to the fancy of the individual.

"Thus it befalls that an Italian machine generally carries a picture of a flower on its sides. It is characteristic of the race, that a French machine usually wears either a valorous, sonorous name, or the name of a woman. But your average British airman is apt to christen his machine 'Old Bill' or 'Gaby' or 'Our Little Nipper,' or 'The Walloping Window Blind'—I have seen all of these cheery titles emblazoned upon splendid aircraft in a British hangar, and just let it go at that."

With a pen nicely tinged with corrosive he notes the German, "with tears in his voice, singing his songs of the home place and the Christmas tree and the Rhine maiden as he marches past a burning orphan asylum in Belgium."

A young captain, whom he describes as "a very new, very healthy cherub," took him to a mess dinner—"a noble green salad, and good honest-to-cow's butter." Afterwards the official troubadour sang that battered ballad about the simple country maiden, and her smile it was sublime, "but she met, among others, the village squire, and the rest may not be printed in a paper having a general circulation."

And so he concludes: "I shall always think of them as I saw them last—their number being sixty or so, and their average age twenty-two and a half—grouped at the doorway of their quarters, with the candle-light and the firelight shining behind them, and their glasses raised, wishing us 'Happy landings!'"

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THE Hun aerial post between Budapest and Vienna appears to have been short-lived, the service coming to an end on July 14th through the collapse of the aeroplane at Magyarovar; the two officers were killed and the mail burned.

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WHILE it was running, however, the aerial postmen seem to have had their exciting moments, as, according to the Vienna *Fremdenblatt*, two of the officers conveying mails by air from Budapest to Vienna were attacked at a height of 2,000 ft. by an immense eagle, which was killed by the propeller. It is not very surprising therefore to hear that *the* aeroplane collapsed.

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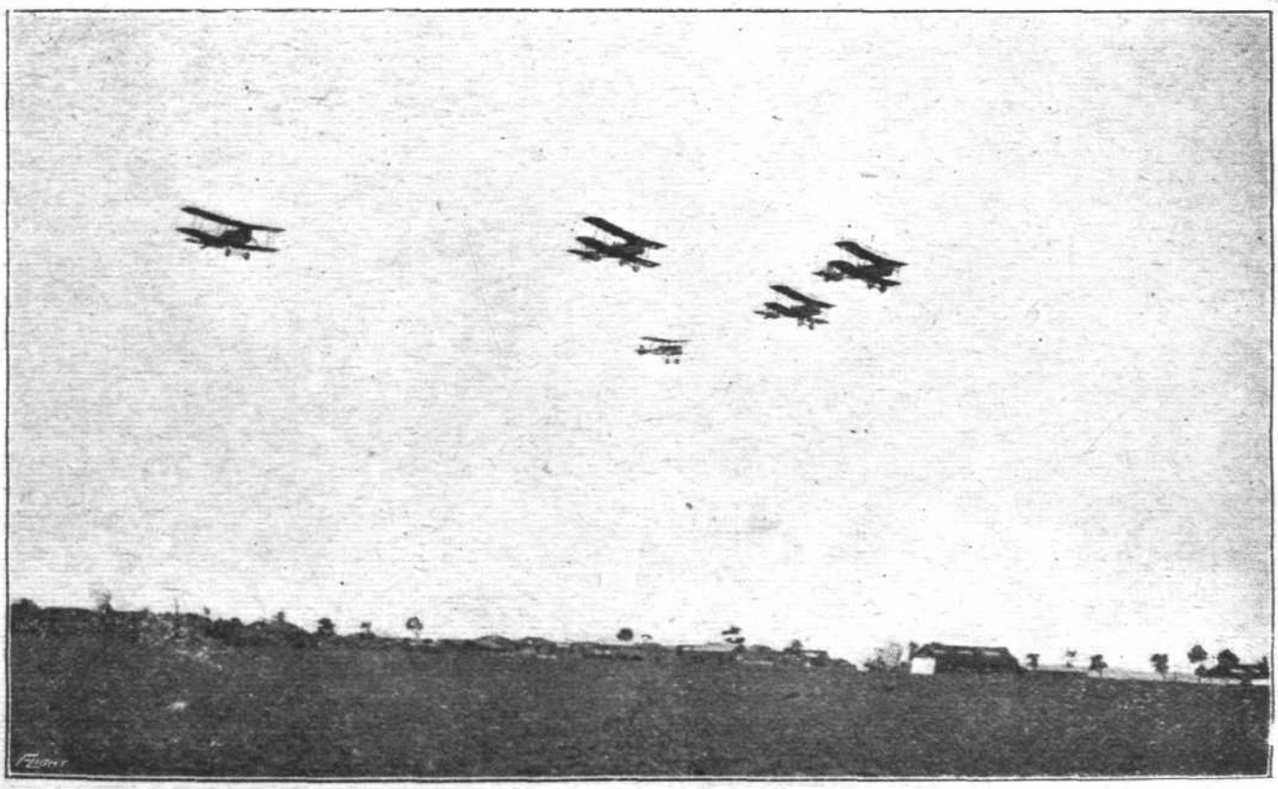
THE spectacle of a London policeman being "hoist with his own petard" is too rare to be ignored when it actually comes about, and a well-known member of the Royal Aero Club has been entertaining his friends with a humorous and graphic description of his recent encounter with a man in blue. As nearly everybody knows, it is the letter of the law, not the spirit, which is enforced in the metropolis against car-owners at all times, but none the less the "peeler" in question found himself in a decided quandary when a motorist spoiled his game by quoting the strict terms of a particular Act. The driver concerned was stopped and questioned as to whether he had a right to use the car and where he was going to on that occasion. He replied: "I am going to a certain place in the North of London, and when I have done my business there, I am proceeding to a certain place in the East of London; from there I have to go to another certain place in the South-East, and afterwards I am driving to a certain place in the West."

"Oh, that won't do for me!" grumbled the constable; "I must have something more definite. What are these certain places, and why can't you name them?" "My good man," the car-owner rejoined, producing a copy of the Official Secrets Act, "I am expressly forbidden by this document to indicate the position of aircraft factories. This Act is ten times worse than Dora; it is what they shoot people under at the Tower every day. I positively dare not infringe its provisions. If you can show me any authority by which you can empower me to defy the Act I will willingly indicate where I am going, but it is as much as my life's worth to tell you without permission." "Well, ain't I a policeman?" growled the "bobby." "You may be a policeman," the motorist retorted, still intent on the successful pursuit of his leg-pulling tactics; "on the other hand, you may not. Anyone can buy a uniform like yours for five and thirty shillings. And even if you are a policeman, how do I know you are a discreet policeman? As it is, you have collected a big crowd, and I can't describe the whereabouts of aircraft factories in their hearing. I tell you, I'm in mortal terror of this Act, and, though I have no wish to obstruct you in the execution of your duty, I'm not going to render myself liable to be shot at dawn." From this position no efforts could make the driver budge an inch, and in the end he was allowed to depart by a much mystified and wholly nonplussed point policeman.



Ministry of Information.

R.A.F. fighting planes leaving their aerodrome in France, in formation, for the enemy lines.

ICARUS.

My old book of classic mythology, with its comfortably worn binding of brown leather, has wonderful tales to tell of days when men dreamt that they might fly; legends of Perseus, the son of Jupiter, who borrowed Pluto's helmet so that he should be made invisible, and flew to the land of the Gorgons, where he slashed off the head of the Medusa, and of the great winged horse, Pegasus, that sprang from her blood; of too-proud Bellepheron, who tried to scale the Heavens on that steed, and miserably failed; of single-seater dragons, and Daedalus, the craftsman, imprisoned by the sinister Minos, King of Crete, who, with his son, Icarus, escaped from durance on wax-fastened wings.

In a little anthology of French lyrical verse there is to be found a dainty little poem, taken from the Italian by the poet Philippe Desportes in the sixteenth century:—

Icare.

Icare est chut ici, le jeune audacieux,
Qui pour voler au ciel eut assez de courage:
Ici tomba son corps dégarni de plumage,
Laissant tous braves cœurs de sa chute envieux.

O bienheureux travail d'un esprit glorieux,
Qui tire un si grand gain d'un si petit dommage!
O bienheureux malheur plein de tant d'avantage,
Qu'il rende le vaincu des ans victorieux!

Un chemin si nouveau n'étonna sa jeunesse,
Le pouvoir lui faillit, mais non la hardiesse;
Il eut pour le brûler des astres le plus beau;

Il mourut poursuivant une haute aventure;
Le ciel fut son désir, la mer sa sepulture:
Est-il plus beau dessein, ou plus riche tombeau?

The sensitive translation by Maurice Baring which follows was published recently by the *Times*:—

Icarus.

Here fell the daring Icarus in his prime,
He who was brave enough to scale the skies;
And here bereft of plumes his body lies,
Leaving the brave all envious of that climb.
O rare performance of a soul sublime,
That with small loss such great advantage buys!
Happy mishap fraught with so rich a prize,
That bids the vanquished triumph over time!

So new a path his youth did not dismay,
His wings but not his noble heart said nay;
He had the glorious sun for funeral fire;
He died upon a high adventure bent;
The sea his grave, his goal the firmament:
Great is the tomb, but greater the desire.

Other than this, and Tennyson's too-hackneyed line, there seems little enough about our art hidden in the poetry books, save for this delicate pastel:—

Les Ballons.

Against these turbid turquoise skies
The light and luminous balloons
Dip and drift like satin moons,
Drift like silken butterflies;

Reel with every windy gust,
Rise and reel like dancing girls,
Float like strange transparent pearls,
Fall and float like silver dust.

Now to the low leaves they cling,
Each with coy fantastic pose,
Each a petal of a rose,
Straining at a gossamer string.

Then to the tall trees they climb,
Like thin globes of amethyst,
Wandering opals keeping tryst
With the rubies of the lime.

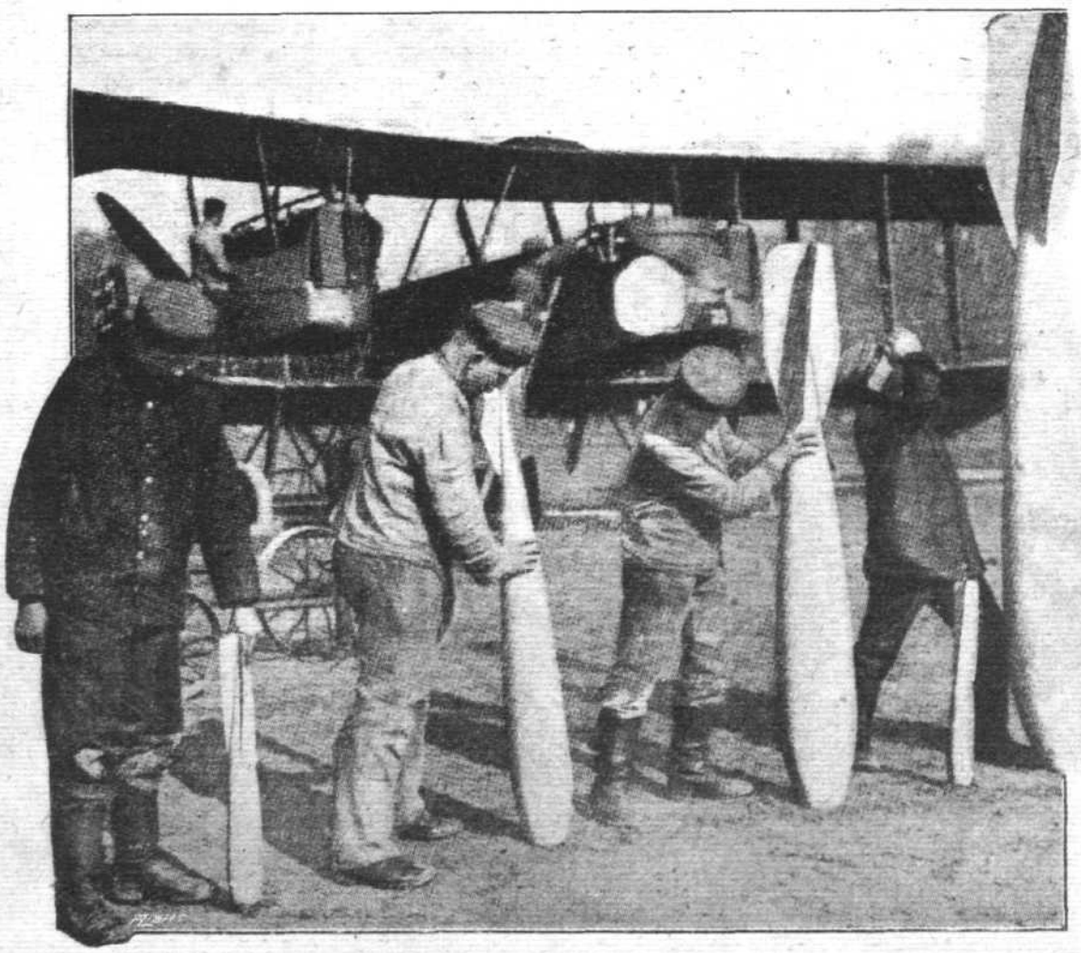
(O. O'F. W. W.)

As yet no great singer has tuned his lyre for us; rather they seem to think with the gentle bookworm Lucas (in his "Song against Speed"):

"The sting, the stimulus, I grant,
But look behind the veil—
Suppose that while the engines pant
You miss the nightingale!"

But with metal torn from beneath the earth and wood razed from its surface man has made great artificial birds to bear him in the air, swift as Ariel and strong as Hercules. And now you will search in vain for the lost isle of Achillea, where they laid the hero of Troy to rest, and o'er which no bird ever flew.

R. H. B.



A German "Family Group."—On the left the baby bomb, weighing 25 kg., and on the right papa, who turns the scales at 300 kg. The bombs in the middle weigh respectively 50 kg. and 100 kg.

FLIGHT

THE PASSAGE OF THE ATLANTIC.

ITEMS FROM ALL SOURCES.

ACCORDING to the New York correspondent of the *Times*, 40 trained pilots on July 15th presented a petition to their commanding officer at Mineola, Major Rhinehardt, that they might be selected to fly in the first fleet of American-built Caproni or Handley-Page bombing machines across the Atlantic. The petition was forwarded to the War Department, and the first detachment of volunteers has been sent to the Standard Warcraft Corporation Aerodrome at Elizabeth, N.J., to be acquainted with the Handley-Page machine.

SOME of the American pilots favour a direct flight from Newfoundland to Ireland, with a string of ships at 200-mile intervals to guide pilots and to render aid in case of accident.

MR. BAKER, the U.S. Secretary for War, is said to be in favour of the flight being attempted this year, and "anything that the War Department can do to help to materialise it will be done."

MR. LAWRENCE R. PHILIPPS, of 40, Hill Street, Berkeley Square, has offered to pay £1,000 as a prize to the first British subject who shall fly across the Atlantic under the conditions laid down for the *Daily Mail* £10,000 prize. Mr. Philipps is a brother of Lord St. Davids, and is chairman and director of several insurance and shipping companies in the City of London.

MR. H. T. VANE, C.B.E., the Managing Director of Messrs. D. Napier and Son, Ltd., writes that he is prepared to supply the engine free of cost for a Transatlantic flight, the engine to be duly incorporated with an approved and suitably designed aeroplane.

"NAVIGATION and engine are the ruling points in the Transatlantic flight, and these should not really present difficulties considering the enormous improvement in both since the war," says Mr. G. Holt Thomas, chairman of the Aircraft Manufacturing Co., Ltd. "A standard D. H. aeroplane, fitted with a standard Rolls-Royce engine, and with large tanks instead of bombs, should do the journey easily, but it is impossible for us to do anything in this direction, as we are too busy with the problems of carrying more deadly weights than petrol, and flying in a different direction than to New York."

MR. CLAUDE JOHNSON, managing director of Rolls-Royce, Ltd. says "so far as our engine is concerned, there is no difficulty whatever in a flight for the *Daily Mail* prize. Our engines are tested, whenever a new series is begun, for a number of hours far in excess of the hours required for the Transatlantic flight. These tests are made under full power, whereas the flight across the ocean would not be made under full power.

"Anything we can do to advance the winning of the *Daily Mail* prize we shall be glad to do."

MR. T. SOPWITH, chairman of the Sopwith Aviation Company, says:

"The Transatlantic flight could be made and the prize won this month, so far as the capacity of the aeroplane of to-day is concerned. Our company has been engaged since the beginning of the war with the construction of the Sopwith 'single-seater' fighting machine. It is not by any means tied down to a small radius of operation. Raids on Essen, so far as my information goes, have been made in a Sopwith.

"Crossing from America to England by air is not the problem it was a few years ago. Undoubtedly the flight is possible. A dozen machines of to-day could do it. They could do it at once if aeroplane makers and pilots were not all so busy with war demands."

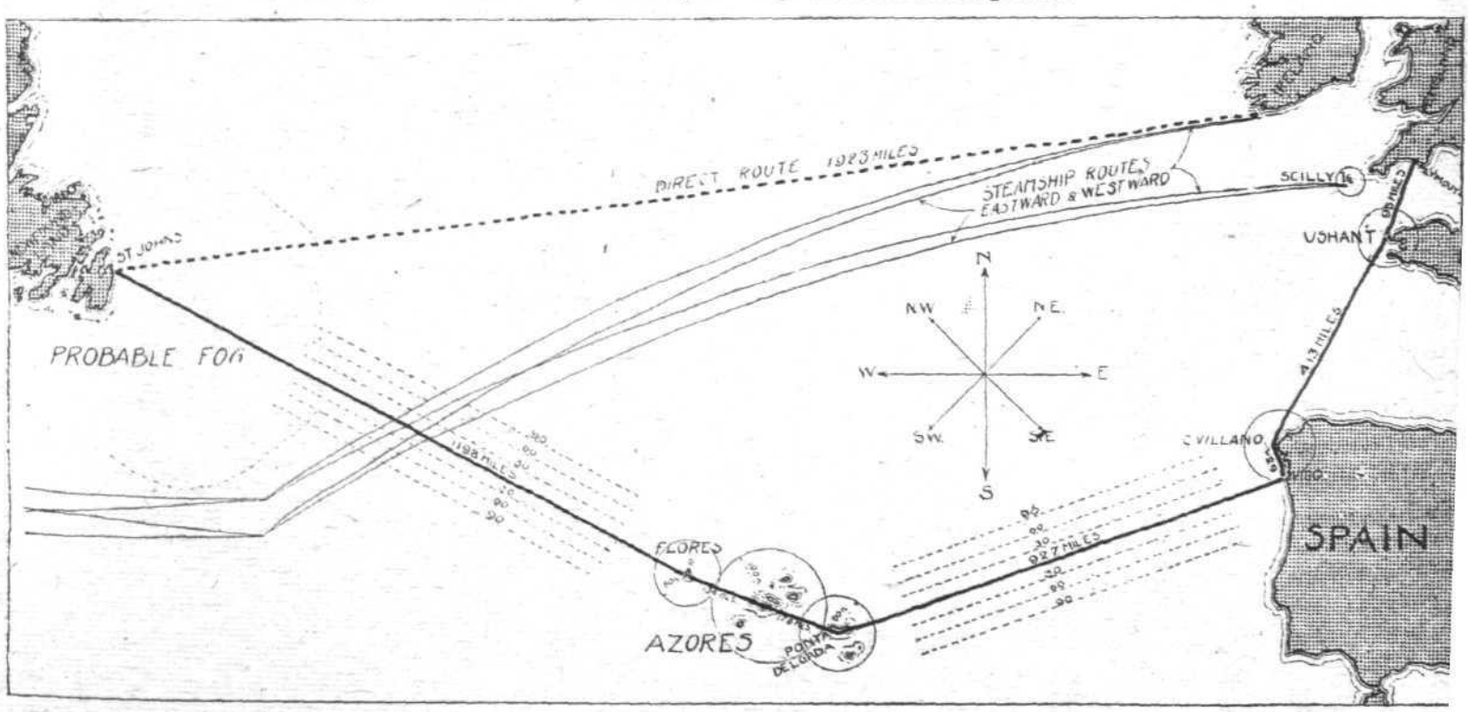
ASKED by the *Observer* representative as to whether the Atlantic crossing is really feasible, Mr. Handley-Page said:

"Now we have aeroplanes that (without entering into exact figures) can fly at more than ninety miles per hour, and can carry fuel and supplies for a continuous flight of more than thirty hours. That gives an air-distance of 2,700 miles (I am purposely keeping within the mark). Of course, if you are only flying a short distance that speed can be vastly exceeded.

"The possibility of halts at land stations is an attractive one, although there is no reason why the direct flight from Newfoundland to Ireland, or even to France, should not be made.

"In the long-run we shall find that it is a mistake to rely upon descents to the water. Aeroplanes fly in winds that make the surface of the sea too rough for any aeroplane or seaplane to live in, or to get off from; and I am confident that this is the wrong way to approach the work. What we have to do—and, indeed, already have done—is to give the aeroplane endurance as to fuel capacity and reliability as to engine power, so that no descent to the water need be contemplated."

"THE first Transatlantic flights will probably be at rather a high altitude," added Mr. Handley-Page. "The advantages are many, and they include the fact that although speed may be a trifle less, the distance accomplished for a given expenditure of fuel is greater."



Map of the route which Lieutenant J. C. Porte proposed to follow across the Atlantic in 1914. The distances are in land miles. The dotted lines parallel to the course are 30, 60, and 90 miles to the north and south of proposed course. The circles round the islands and mainland indicate the probable limits of vision from the machine. The direct route is shown in a thick dotted line.

THE FLIGHT OF AN AEROPLANE AT DIFFERENT ALTITUDES.

By LOUIS DE BAZILLAC, Ingenieur (Ecole Superieure d'Aéronautique de Paris).
Translated by B. BRUCE-WALKER, B.Sc.

(*Concluded from page* 813.)

(*d*) *The Logarithmic Diagram.*

Lastly we will discuss a fourth method, which seems to be more synthetic and more complete than the others. We mean the logarithmic diagram of Mr. Eiffel. We present this neat solution as it was set forth by Mr. Eiffel (in his work "New Researches on the Resistance of the Air and Aviation"),

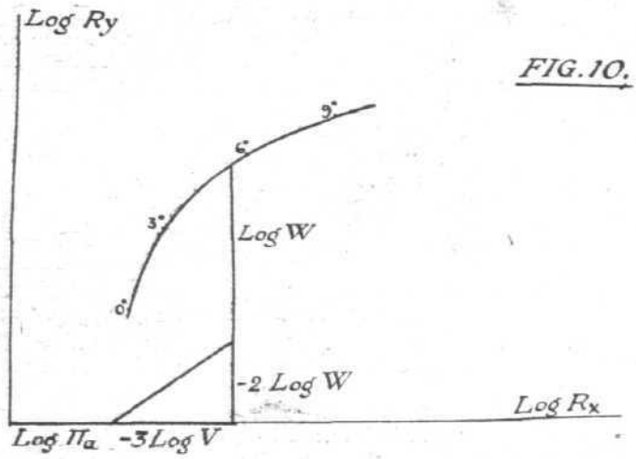


FIG. 10.

except for some modifications in what is concerned with the study of altitude and the corresponding speeds.

Let R and R_y as above (Case C.) denote the resistance and total lift for unit speed.

$$R_x = K_x S + \lambda;$$
$$R_y = K_y S.$$

The power required for the aeroplane Π_r, its weight W, and its speed V are connected with R_x and R_y by the relations:

$$\Pi_r = R_x V^3;$$
$$W = R_y V^2.$$

Take the logarithms:

$$\text{Log } R_x = \log \Pi_r - 3 \log V;$$
$$\text{Log } R_y = \log W - 2 \log V.$$

These equations show that the abscissæ log. R_x of a point of the logarithmic diagram can be regarded as formed of two segments, log W. and −3 log V, and the ordinate log R_y as formed of two segments, log W and −2 log V. The resultant of the two segments −3 log V and −log V has a constant

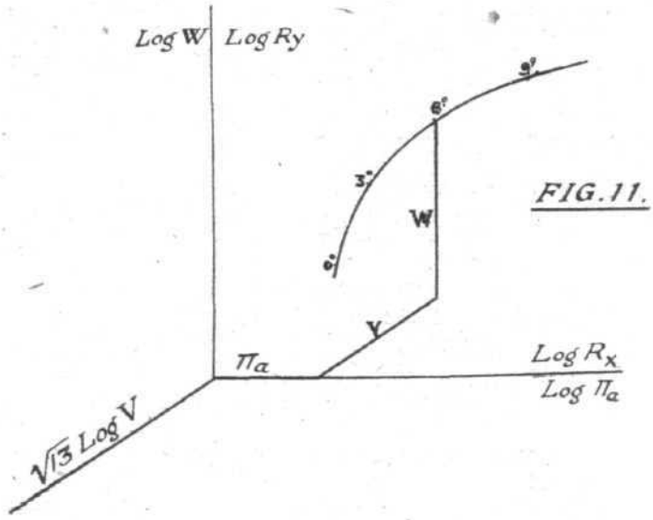


FIG. 11.

direction and remains proportional to log V; its angular coefficient is in fact $\frac{2}{3}$ and its length is, assuming rectangular axes, $\sqrt{3^2 + 2^2}$ log V or $\sqrt{13}$ log V. Thus it is possible to pass from the origin to a point on the curve, placing end to end three segments of known directions and proportional respectively to log Π_r, log V, and log W.

Mark off then (Figs. 10 and 11), starting from the origin, three scales parallel to the axes and to the resultant segment of the V's, and bearing respectively at points of which the distances from the origin are log Π_r, log W and $\sqrt{13}$ log V, the indications of the corresponding values of Π_r, W and V.

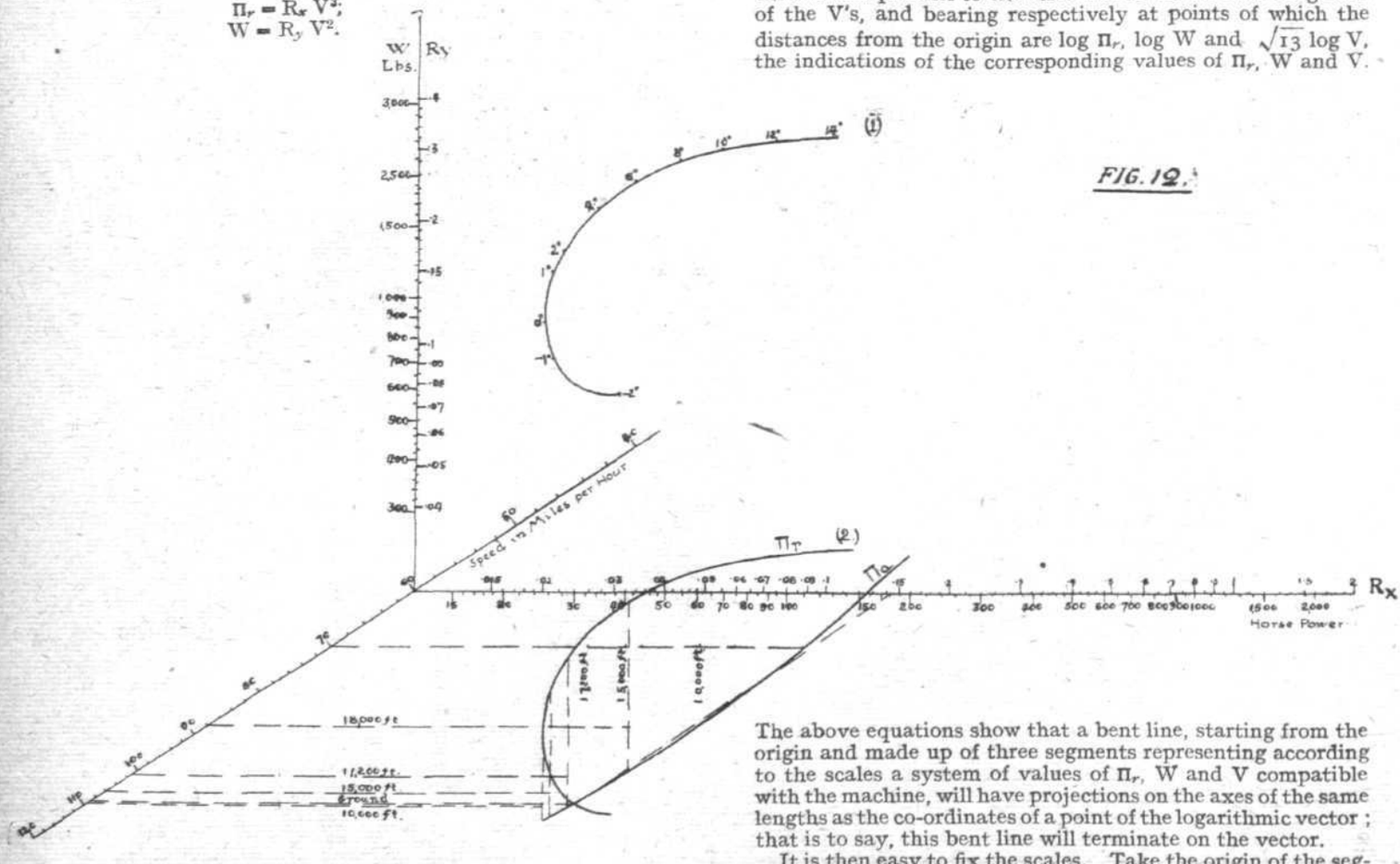


FIG. 12.

The above equations show that a bent line, starting from the origin and made up of three segments representing according to the scales a system of values of Π_r, W and V compatible with the machine, will have projections on the axes of the same lengths as the co-ordinates of a point of the logarithmic vector; that is to say, this bent line will terminate on the vector.

It is then easy to fix the scales. Take the origin of the segments representing V at the point measuring 60 miles an hour.

The segment representing V is nothing for the speed of 60 miles an hour, and the logarithmic diagram will be found to indicate directly the correlative values of the weight and the

power at which the aeroplane has the speed of 60 miles an hour. To determine the speed scale, it suffices to project the scale of R_x on to the straight line making with this axis an angle whose tangent equals $\sqrt{13}$.

To determine the position of the scales of Π_r and W with reference to those of R_x and R_y it is sufficient to state algebraically that for the speed of 60 miles an hour = 88 ft. per second (a speed that must be expressed in feet per second in such equations as we have established) the diagram has for the value of its co-ordinates R_x and R_y those of Π_r and W, *i.e.*, we must have, since Π_r is now to be expressed in horse-power,

$$550\ \Pi_r = R_x\ 88^3;$$
$$W = R_y\ 88^2;$$

whence, taking for example $\Pi_r = 10$ and W = 500,

$$R_x = 0.008;$$
$$R_y = 0.0646.$$

The scales must then be marked off making $\Pi_r = 10$ coincide with $R_x = 0.008$ and W = 500 with $R_y = 0.0646$.

This achieved, if the segment W is carried away from the diagram we have for the locus of the extremity of this segment (Fig. 12) the curve (2), which represents the powers Π_r required for the aeroplane as a function of the speed.

To the weight $W = R_y V^2$ reckoned on the scale there corresponds in fact the power $\Pi_r = R_x V^3$. This weight W remains the same at all altitudes; the power curve consequently remains the same also.

It can be assumed in the absence of exact experiments that the power of the engine is reduced proportionally to the density of the air. Now we have seen (Case C) that reducing the power of the engine amounts to increasing the weight of the aeroplane. Under these conditions the characteristics at various altitudes are obtained by moving down the original curve (2) through a height measuring on the scale of W the reduction μ of the density of the air. (If for 10,000 ft., for example, $\mu = 0.71$ the curve (2) must be carried down for the distance separating 710 from 1,000 on the scale of W). Then leave curve (2) fixed, and from one extremity on the curve of powers required Π_r drop a vertical line equal to the reduction μ due to the altitude considered, in such a way that the other extremity of it touches the curve of powers available Π_a constructed on V. Take through this point a parallel to the axis of the powers. The point of intersection of this straight line with the axis of V gives the speed V on the scale, at the altitude considered.

The maximum segment reckoned vertically from the curve of powers Π_r (Curve 2) down to the curve Π_a gives the reduction μ corresponding to the maximum altitude attained. Bring one end of the segment of the logarithmic scale from point 1. The other end of the segment moved in the direction of decreasing values gives on the scale the value of μ minimum, *i.e.*, the maximum altitude attained.

The horizontal speed corresponding to the maximum vertical speed corresponds very nearly with the minimum resistance. Now, the resistance R is connected to the weight W by the relation

$$\frac{R}{W} = \frac{R_x}{R_y} \text{ or } \log \frac{R}{W} = \log R_x - \log R_y.$$

The points corresponding to one ratio W are then on straight lines, parallel to $\log R_x - \log R_y = 0$, *i.e.*, on parallels to the interior bisector of the axes R_x and R_y. The minimum of $\frac{R}{W}$ is given by the minimum of $\frac{R_x}{R_y}$, *i.e.*, by the tangent taken to the polar curve parallel to the interior bisector. The horizontal speed corresponding to the maximum vertical speed is, moreover, obtained by taking a parallel to the axis of the powers through the point of contact with the curve Π_r of the bisector of the axes R_x and R_y. The point of intersection of this straight line with the axis of V gives the speed V sought. The surplus power corresponding to this speed, *i.e.*, the horizontal segment contained between Π_r and Π_a measured on the logarithmic scale, provides the maximum vertical speed. This same segment diminished by the horizontal segment intercepted by the curve of power available, provides the vertical speed at the different altitudes.

The advantages of the logarithmic polar diagram will immediately be seen. The powers required are the locus of the extremity of a segment equal to the weight, of which the other extremity traverses the polar curve. This fact permits the immediate reading on the diagram of the consequences of a change of weight on the altitudes and the speeds. Again, the diagram shows that when the weight or the altitude is increased or diminished, if we diminish or increase the surface or the power so that the ratio of the weights to each other, and that of the altitudes, the surfaces and the powers are the same, the equilibrium of the aeroplane occurs under the same conditions of speed and incidence.

NOTE.—We have assumed in this investigation, in default of exact experiments and for simplicity of calculation, that the thrust of the propeller is reduced in proportion to the density of the air, as also the total coefficients of drift and lift. In practice the drift and lift coefficients sensibly obey the law of the ratio of the densities of the air, but the thrust of the propeller follows a different one.

Put v for the thrust of the propeller and μ for the ratio of the coefficients of drift and of lift, a function of the altitude. Suppose that μ and v are represented as a function of Z by the curves shown (Fig. 13). These curves no doubt only remotely resemble the exponential function $\mu = 10^{\frac{-Z}{60370}}$, but this result has yet to be proved in view of the elements of the problem that we have neglected, such as the temperature and hygrometric state of the air, the diminution of the gas admission and of the revolutions of the engine with the altitude, &c.

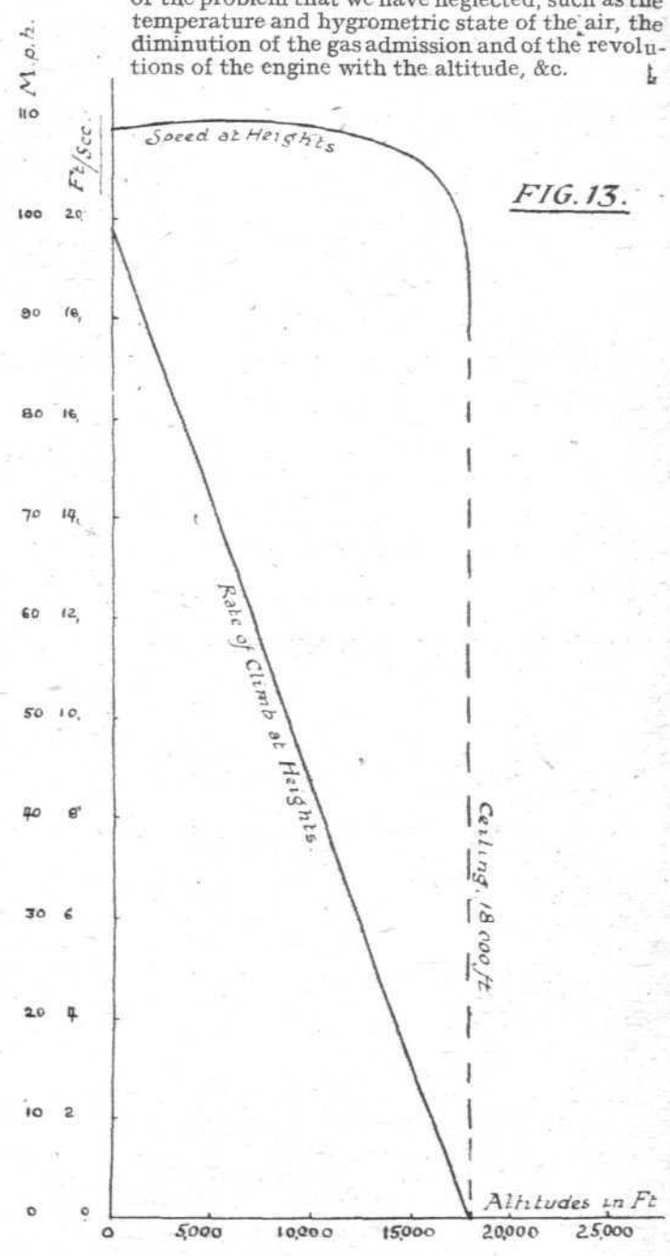


FIG. 13.

The function v that belongs to the thrust of the propeller gives the maximum altitude attained. This altitude corresponds to the value of v for which Π_a is tangential to Π_r.

Suppose that μ has been made identical with v. To evaluate the speed corresponding to the altitude furnished by v one of the extremities of a vertical segment equal to the reduction of v is placed on the "power required" curve and the other on that of "powers available." Through the point thus given is drawn a parallel to the axis of the powers. The intersection of this line with the axis of V gives the speed required. As μ is greater than v the reduction of μ is also smaller; the vertical segment will be smaller. This segment is placed on to the segment due to the reduction of v. The parallel to R_x taken through the lower extremity of the latter gives the speed V. If v was greater than μ the vertical segment is greater, the altitude greater, and the corresponding speed higher. We see again, though in a different form, the results put forward above, and the use of feeding the engine with oxygen.

Personals.

Casualties.

LIEUT. E. V. BELL, R.A.F., who was reported missing on May 14th, and is now reported as having been killed on that date, aged 19, was the only son of Mr. and Mrs. E. T. Bell, of 1, Alma Square, St. John's Wood (formerly of Shooters Hill). He was a Grecian of Christ's Hospital, captain of Middleton B, winner of the Thompson Gold Medal for Mathematics in 1916, the Lamb Essay Medal, 1917, and a Mathematical Scholarship at Trinity College, Cambridge, in 1917. He was a fine forward in the first XV—awarded honours cap—and a strong runner, winning in 1916 the steeplechase, open mile, half and quarter mile. On leaving school he joined the R.N.A.S. and was attached as a scout pilot to a fighting squadron.

LIEUT. W. W. JENKIN, R.A.F., who was killed in action on June 25th, aged 20, was the only son of Maj. and Mrs. W. A. Jenkin, of Liskeard, Cornwall. He was educated at Blundell's School, Tiverton, and went from there to Sandhurst. He was gazetted to the Duke of Cornwall's L.I. in August, 1916, and joined a battalion of that regiment at the Front in the following October. He was stationed for nearly a year at a prisoner of war camp, and afterwards was accepted for the Royal Flying Corps. Having completed his training in England, he returned to the Front in April, receiving his promotion to Lieutenant shortly after.

LIEUT. HERBERT WHITELEY SELLARS, M.C., R.A.F., aged 22, who was reported missing, and is now reported killed on May 15th, was the second son of Mr. and Mrs. Frank Sellars, of Wentworth, Hoylake. He was educated at The Leas, Hoylake, and Loretto School, Musselburgh, and was entered for Gonville and Caius College, Cambridge. He was given his commission in the R.F.C. in June, 1916, after winning his "wings," and was awarded the M.C. in June this year.

LIEUT. P. F. H. WEBB, R.A.F., who was killed in action on July 7th, aged 29, was the eldest son of Mr. and Mrs. W. Trego Webb, 7, Scarsdale Villas, Kensington.

MAJ. REGINALD L. ALDERSON, R.A.F., who died on June 30th, aged 39, at a naval hospital, was the youngest son of the late Canon Alderson. He was educated at Winchester, and joined the armoured cars as armament officer in the first year of the war. He became attached to the R.N.A.S., and subsequently served at two air stations in this country in the same capacity. He obtained his pilot's certificate in 1917, and was just about to train as a ferry pilot when he was taken ill.

SEC. LIEUT. OSBERT LEVESON CALVERLEY, R.A.F., who was accidentally killed while flying in England on July 12th, aged 19, was the younger son of Maj. and Mrs. E. Leveson Calverley, of Oakville, Ontario.

LIEUT. R. H. V. CHESTER, R.A.F., who was killed in an aeroplane accident, was educated at Merchant Taylors' School, where he was a mathematical scholar, and had also gained a senior classical scholarship. Leaving there with a Richard Hilles Scholarship, he gained an open mathematical scholarship at Brasenose, Oxford. He was also captain of the school cricket XI in 1915 and 1916, and had been a member of the first Rugby XV for three years. Entering the Royal Flying Corps, he became a skilful flyer, and was shortly made instructor—a post which he retained to the end, though he had applied to be sent to the Front.

SEC. LIEUT. NORMAN STANLEY FORD, M.C., the Queen's Regt., attached R.A.F., who was accidentally killed while flying on July 19th, aged 21, was the only son of S. H. and F. E. Ford, of Tarquah, Gold Coast Colony, and 9, Eliot Hill, Lewisham.

CAPT. GILBERT E. JOHNSON, who was drowned while on active service on July 4th, aged 29, was the younger son of Mr. and Mrs. W. Johnson, The Mount, Shrewsbury.

CAPT. ARTHUR LESLIE SIMMS, D.S.C., R.A.F., who was killed on July 14th while flying, aged 20, was the younger son of Mr. and Mrs. G. F. Simms, the Farlands, Stourbridge. Educated at the Lickey Hills School and Malvern College, in June, 1916, he was granted a commission in the R.N.A.S. In October, 1917, he was awarded the Distinguished Service Cross for valuable services in home waters, and was promoted to Flight-Lieutenant. Afterwards he became an instructor, and later he was transferred to the Experimental Construction Department. Since the formation of the Royal Air Force he had made several applications for service at the Front, and at the time of his death was expecting orders to proceed there.

Married.

MAJ. G. C. BAILEY, D.S.O., R.A.F., was married on July 15th at St. Gabriel's, Warwick Square S.W., to PHYLLIS, youngest daughter of Sir JOHN STEVENS, I.C.S. (retd.), of 2, Lansdown Place West, Bath.

LIEUT. A. H. BURMANN, A.S.C., attached R.A.F., younger son of Mr. and Mrs. Burmann, Bedford Park, W., was married on July 11th, at the Church of the Holy Ghost, Nightingale Square, to MARY KATHLEEN, youngest daughter of Mr. and Mrs. PEARCE, 77A, Nightingale Lane, S.W.

SEC. LIEUT. THE REV. LAWRENCE WILLIAM FAUCETT, B.A., B.D., R.A.F., Rhodes Scholar, son of Mr. and Mrs. I. L. Faucett, Chattanooga, Tennessee, U.S.A., was married on July 18th at All Saints', Warlingham, to MARIEL GRACE MARGARET, daughter of the late Mrs. BARR and of Mr. JAMES BARR, The Authors' Club.

FIRST LIEUT. HENRY J. FLEITMANN, U.S. Air Service, was married on July 19th, at St. James's, Piccadilly, to DOROTHY, only daughter of Capt. and Mrs. COLIN MCCULLOCH, Hampstead.

LIEUT. ARTHUR KNOWLES HOWARD-JONES, R.A.F., on leave from France, elder son of Dr. and Mrs. Arthur Jones, "The Hollies," Stokesby, Middlesbrough, was married on July 17th, at St. Peter's Church, Harrogate, to AGNES LOUISE MARKHAM, daughter of Mrs. E. MARKHAM and the late T. J. MARKHAM, Holland Park, London, W.

THOMAS AUDLEY LANGFORD-SAINSBURY, R.A.F., was married on July 10th at St. Mary Abbot's, Kensington, to MAUD HAMILTON, only daughter of the late W. RUSSELL MORTIMER and Mrs. RUSSELL MORTIMER, of 57, Brunswick Place, Hove.

LIEUT. CHARLES GUY LINDLEY, R.A.F., second son of Mr. and Mrs. E. T. Lindley, of "Vambery," Norbury, S.W., was married on July 16th at Croydon to ELIZABETH SUTHERLAND, elder daughter of the Rev. GEO. and Mrs. LANSDOWN, of Chichester.

MAJ. R. B. R. MCBAIN, M.C., Croix de Guerre, R.F.A. and R.A.F., second son of the late George McBain and Mrs. McBain, of Shanghai, was married on July 18th, at St. Peter's, Eaton Square, to MISS VERA DAVIS, only daughter of the late Maj. J. W. H. DAVIS, of Aldershot.

CAPT. NORMAN NOWELL, R.A.F., only son of H. M. Nowell of Norton-on-Tees, was married to JOYCE, youngest daughter of Mr. and Mrs. F. HEWETT, of Hythe, near Southampton.

SEC. LIEUT. JOSEPH JOHN BURCHETT RUTTER, R.A.F., on of Mr. and Mrs. Clarence Rutter, of Wincanton, Somerset, was married on July 20th, at The Friends' Meeting House, Westminster, to CHRISTINE SOPHIE, daughter of Mr. and Mrs. S. C. BELCHAMBER, Church House, Taybridge Road, S.W.11.

LIEUT. ERNEST B. SMYTH, R.A.F., eldest son of Mr. and Mrs. F. Buxton Smyth, Overbury Avenue, Beckenham, was married on July 15th, at St. Matthew's Church, Westminster, to LINA, eldest daughter of Mr. and Mrs. J. C. GILBERT, of 35, Binfield Road, Clapham.

CHARLES DELMÉ BRERETON STILES, R.A.F. (South Africa), was married, by special licence, on July 8th, to NANA LYALL, only daughter of the late ANDREW THOMSON, Writer, Kirkwall, Orkney, and Mrs. THOMSON, of 181, Kenmure Street, Pollokshields, Glasgow.

To be Married.

An engagement is announced between Maj. ADAMS, R.A.F., son of W. J. Adams, of Sydney, and Miss WINIFRED B. ADAMS, daughter of the late J. H. ADAMS, of Congleton, Cheshire.

A marriage has been arranged, and will take place at the old Parish Church, Ayr, at 2.30 on Wednesday, August 14th, between CAPT. EDWARD D. ATKINSON, D.F.C., R.A.F., son of the late J. H. Atkinson, of Calcutta, and NANCY, second daughter of Mr. and Mrs. DAVID ROWAN, Dunskaig, Ayr, Scotland.

The marriage of Mr. ALGERNON EDWARD BERRIMAN, O.B.E., F.A.E.S., M.I.A.E., Chief Engineer of the Daimler Co., Ltd., to Miss ENID KATHLEEN SUTCLIFFE, daughter of Mrs. SUTCLIFFE, Westville, Leek, will take place at the Chapel Royal, Savoy, at 2.15 p.m., on Wednesday, July 31st. Following the ceremony a reception will be held at the Savoy Hotel.

FLIGHT
AIRCRAFT ENGINEER

A marriage has been arranged between Enseigne de Vaisseau ETIENNE BRUZON, French Navy and Aviation Maritime, and EVELYN NORAH MAVOURNEEN, younger daughter of Col. MACARTNEY, C.B., late Dorsetshire Regiment, and Government Secretary, Guernsey.

The marriage arranged between MAJ. C. K. COCHRAN-PATRICK, D.S.O., M.C., R.A.F., son of Capt. and Mrs. Kennedy Cochran-Patrick, Ladyland, Beith, Ayrshire, and ELLA, daughter of Mrs. SYDNEY GROSS, 55, Green Street, Park Lane, will take place at St. Mark's, North Audley Street, on July 27th.

An engagement is announced between LIEUT.-COL. F. F. MINCHIN, D.S.O., M.C., R.A.F., second son of Maj.-Gen. F. F. Minchin, C.B., and the late Margery Minchin, of Armagh, Co. Tipperary, Ireland, and Holywell House, Bishops Waltham, Hampshire, and MARGARITA BEATRICE (RITA), only daughter of Mr. and Mrs. WHITE, of The Poplars, Maidstone.

The engagement is announced between CAPT. G. R. POLLARD, R.A.F., youngest son of Sir George Pollard, M.P., and Lady Pollard, of Southport, and Miss D. CHEETHAM, daughter of Mr. and Mrs. JOHN A. CHEETHAM, of Brighouse.

Items.

MR. HIATT BAKER, of Oaklands, Almondsbury, Bristol, has presented "Athens," the well-known bathing place on the Thames above Windsor, to Eton College, in perpetuity, as a bathing place for "the scholars of Eton College." The gift is to commemorate the love of his son, who was killed in a flying accident last summer, for Eton and for "Athens."

Among recent gifts received by the R.A.F. Aid Committee and R.A.F. Prisoners Fund is the sum of £25, sent in memory of LIEUT. FRANCIS L. MOND, R.A.F., killed in an air fight on May 15th.

The parents of LIEUT. H. B. REDLER, M.C., who was accidentally killed while flying in Scotland on June 21st, would greatly appreciate letters from his friends. They should be addressed to Mr. D. B. Redler, Moorreesburg, South Africa.

CAPT. JOHN L. TROLLOPE, M.C., R.A.F., who was brought down in March and is now a prisoner in Germany, has had his left hand and wrist amputated as a result of his wounds. Capt. Trollope is the airman who accounted for six enemy machines in one day.

Any information relating to SEC. LIEUT. PHILIP WESTHOFEN, R.A.F., reported missing April 12th, now unofficially reported dead, would be gratefully received by his aunts, Misses Glendinning, c/o White and Park, 66, George Street, Edinburgh.

Excess Profits Awards.

THE following award has been made by the Board of Referees under the Finance Acts, in response to applications made for increases in the excess profits statutory percentage :—

Aircraft Manufacturers.—The Society of British Aircraft Constructors, Ltd., applied in respect of the manufacture of aircraft (including both heavier than air and lighter than air) and aircraft propellers. Companies have their rate raised to 15 per cent., and private undertakings get 1 per cent. more for periods prior to 1st January, 1917, and 2 per cent. more for periods after 31st December, 1916.

The Looping Fatality at Brighton.

AT the adjourned inquest at Brighton, on July 17th, on George Ralph Sinden, who was killed by a sandbag which fell from an aeroplane manœuvring over the town, Lieut. Stewart, Royal Sussex Regt., attd. R.A.F., who was in charge of the machine at the time of the occurrence, said he was instructed to take a new machine to France, and while flying over Brighton, at a height of 4,500 ft., he was endeavouring to loop the loop, that being one of the recognised tests; and he knew of no regulation against the manœuvre over towns. Having dived down, he was about to turn the machine upside down, when he observed a sheet of flame issue from the engine. He was in great danger, and experienced considerable difficulty in righting the aeroplane. Then he noticed something on the tail. At first he thought that a portion had broken, but something fell away. Ultimately he realised that sandbags had gone.

The jury returned a verdict of accidental death, and exonerated Lieut. Stewart from blame, but expressed the opinion that responsibility rested upon whoever sent out the machine in the condition in which it was.

Boxing in the R.A.F.

THE first boxing championships for schools of the Royal Air Force took place at Reading on Saturday last, when, after keen competition, the final bouts resulted as follows: Bantam-weights: Bird (Oxford) beat Gardner (Bath). Feather-weights: Wallis (Denham) defeated Cameron (Oxford). Light-weights: Driver (Hastings), W.O., Lewis (Bath) being unable to contest the final owing to a sprained wrist. Welter-weights: Norman Clark (Reading) beat Rowe (Denham). Middle-weights: Willcox (Denham) and White (Oxford) each received first prizes. Light-heavy-weights: Hitge (Denham) defeated Koch (Hastings). Heavy-weights: Baker (Oxford) beat Mitchell (Bath).

Forthcoming Sports.

THE first annual sports of the Grahame-White Recreation Association will take place at the London Aerodrome, Hendon, on Saturday, July 27th, commencing at 2.30 p.m.

An Athletic Sports meeting in connection with the British Caudron Social and Athletic Club will be held at Preston Road (Metropolitan Railway) Sports Ground, on Saturday, August 17th, at 2.30 p.m. There will be several open events, and the price of admission is 1s., including tax.

Austrian Aerodrome Captured.

IN their recent advance in Albania, Italian cavalry succeeded in capturing an Austrian aerodrome near Fieri, with machines, pilots, mechanics complete. One machine which landed after the Italians had secured possession was also captured.

Germans Bomb a Prison Camp.

DURING the night of July 15th-16th some German bombing aeroplanes carried out an expedition, and wittingly or unwittingly chose as their objective a prisoners' camp situated 50 kilometres from the lines in the region of Troyes. The bombardment lasted more than an hour, and gave the enemy excellent results. Two French soldiers, attached to the camp station, were wounded, 94 German prisoners were killed and 74 wounded.

D'Annunzio's Bombing Command.

ONE of the aeroplane squadrons when Pola was bombed for the tenth time, on July 17th, was commanded by the poet Major d'Annunzio. Over 1,000 kilogrammes of high explosives were dropped on the arsenal and the Broni Islands. On the return journey the machine in which was Major d'Annunzio was, owing to some defect, obliged to plane down, and alighted undamaged in the marshes near Venice.

Noted German Pilot Accidentally Killed.

CAPT. WILLY REINHARDT, commander of the late Baron von Richthofen's "circus," is reported by the *Lokalanzeiger* to have been killed during a trial flight. Reinhardt was credited, on June 13th, with having brought down 20 enemy machines, and the squadron claims 177 aerial victories under his command.

Vienna Fears Air Raids.

FROM an Austrian source information has been received in Rome that the people of Vienna and Berlin are beginning to entertain serious fears of enemy air raids on their cities. A Vienna newspaper speaks of the growing frequency and increasing extent of the Entente aerial operations over both German and Austrian towns. The paper speaks with alarm of the growing superiority of the Entente aviation, and admits that all the Allied Powers now possess machines powerful enough to enable them to make bombing raids on the German and Austrian capitals.

U.S. Take Over a German Firm.

THE Custodian of Alien Property in the U.S. announces that the German-owned Becker Steel Co. of America has been taken over. In this way, it is understood that the U.S. Government will obtain possession of a secret process for preparing high-speed steel, which is expected materially to aid the production of high-power aeroplane motors. It has been established that the majority of the shares are owned in Germany.

"Carburation."

IN spite of the importance of the subject, the principles underlying the operation of the carburettor are very little understood generally. Doubtless this is because it is not easy to describe what happens in simple language. In our sister journal "Auto.," however, "Technicus" has tackled the difficult task, and very successfully. The first article appeared in the issue for July 19th, and the concluding portion is in this week's issue. Copies of the two can be obtained from the publishing office, 36, Great Queen Street, Kingsway, W.C.2, for 3d., post free.

THE ROYAL AIR FORCE

London Gazette, July 16th.

The following temporary appointment is made :—

Staff Captain, 2nd Class.—(P.) Lieut. (Temp. Capt.) C. E. Wardle, and to be Temp. Maj. while so employed ; June 27th.

Flying Branch.

Captains to be Temporary Majors while employed as Majors (A. and S.) :—P. Huskinson ; June 23rd. B. E. Baker, D.S.O., M.C., G. C. Bailey, D.S.O. J. C. Griffiths, H. Heming, R. E. A. W. Hughes-Chamberlain, T. R. Irons, H. W. G. Jones, M.C., R. N. Montagu-Stuart-Wartley, D. O. Mulholland, A. G. Moore, M.C., R. B. Mansell, A. D. Pearce, W. R. Read, M.C., A. H. O'H. Wood ; July 1st. J. C. Slessor, M.C. ; July 3rd. W. E. F. Davidson, H. S. Lees-Smith ; July 6th. D. J. Sheridan, E. R. Vaisey ; July 12th.

Lieutenants (Temporary Captains) to be Temporary Majors while employed as Majors (A. and S.) :—S. W. Dunckley ; May 1st. F. T. Digby, D.S.O., D.S.C., J. B. P. Ferrand, D.S.O. ; June 23rd. W. T. F. Holland, W. C. Mackey ; July 1st. A. M. Shook, D.S.C. ; July 4th. C. R. Cox ; July 6th. J. B. McCudden, V.C., D.S.O., M.C., M.M. (since killed) ; July 9th. H. G. White, E. L. Williams, M.C. ; July 12th.

Lieutenants to be Temporary Captains while employed as Captains (A. and S.) :—(Hon. Cap.) G. S. Abbott ; June 23rd. J. G. S. Candy ; July 6th. Capt. F. H. Mardall to be Capt. (A. and S.) from (Ad.) ; April 1st.

Lieutenants (Observer Officers) to be Lieutenants (A. and S.) :—V. A. Lanos, W. Franklin ; June 7th. L. O. Stocken, W. L. Yorath, W. E. Davis, M.C., C. G. Vandyk ; June 11th. P. Wood, T. Brownrigg ; June 12th.

(Hon. Capt.) S. H. Holland, and to be Hon. Capt. ; June 13th.

The following are granted temporary commissions as Second Lieutenants (A. and S.) :—D. W. Beard ; April 3rd. A. H. Hull (Prob. Flight Officer, late R.N.A.S.) ; May 15th.

Second Lieutenants (late General List, R.F.C., on prob.) are confirmed in their rank as Second Lieutenants (A. and S.) :—H. Shone ; April 9th. H. L. Pennal ; April 20th. M. J. Carroll ; April 25th. R. F. Reid ; April 28th. L. W. Sellar ; May 3rd. M. E. Miller ; May 22nd. A. H. Bradley, M. Watt ; May 31st. H. W. Bingham ; June 1st. S. C. Booth ; June 4th. D. H. Keevil ; June 6th. G. Bannerman, W. F. Stevens, W. A. Hunter ; June 8th. M. J. Poulton, C. D. Notley, F. W. Foster, F. Buckle, S. A. Forberger ; June 9th. A. C. Porter, S. G. Williams, L. M. Frederick, J. W. Pope ; June 10th. V. G. Brindley, F. D. Butcher, G. H. Fowles, R. Tindle, E. H. Covell, E. D. Butler, A. Brandrick, L. Proudfoot, W. H. Stone ; June 11th. E. E. Crosby, S. F. Legge, F. A. Ledgard, A. V. Raymond, L. C. Wraight, A. H. Williams, R. E. Goodfellow, A. Sculthorpe, R. S. Edwards ; June 12th.

Lieutenants (A. and S.) to be Lieutenants (K.B.) :—C. L. L. C. Brock, G. B. Ash ; May 10th.

Second Lieutenants (late General List, R.F.C., on prob.) are confirmed in their rank as Second Lieutenants (K.B.) :—J. A. Beard, W. Dowling, J. S. Machin, T. S. Mobey ; May 10th. J. W. A. Legge-Willis, F. W. Osman ; June 1st. T. M. Bartlett, F. M. Hawthorn, L. P. Jackson, H. G. Mackay ; June 15th. G. H. L. Robertson, H. W. Robinson ; July 1st.

The following are granted temporary commissions as Second Lieutenants (K.B.):—P. S. Page, M.C. (Temp. Capt., R. Fus.), and to be Hon. Capt., J. E. Edwards, M.C. (Temp. Lieut., Welsh R.), and to be Hon. Lieut., A. Hanson (Temp. Lieut. York and Lanc. R., and to be Hon. Lieut., J. S. Hunter (Lieut., Lond. R., T.F.) and to be Hon. Lieut., N. H. N. MacLeod (Temp. Lieut., R. Sc. Fus.), and to be Hon. Lieut., A. A. Robinson, M.C. (Sec. Lieut., K. L'pool R.) ; May 10th. W. O. Ford (Temp. Lieut., Shrops. L.I.), and to be Hon. Lieut., G. F. A. Lewin) M.C. (Lieut., Suff. R.), S.R., and to be Hon. Lieut., I. P. Venner (Temp. Lieut., R.E.), and to be Hon. Lieut. ; June 1st. H. A. Porter (Capt., R.G.A., T.F.), and to be Hon. Capt., E. St. H. Davies (Temp. Lieut., R. Suss. R.), and to be Hon. Lieut., H. E. R. Ford, M.C. (Temp. Lieut., R.W. Fus.), and to be Hon. Lieut., F. C. Giles (Temp. Lieut., Midd'x R.), and to be Hon. Lieut., S. G. Manders (Lieut., R.W. Fus.), and to be Hon. Lieut., H. F. Sampson (Temp. Lieut., Bord. R.), and to be Hon. Lieut., C. Trenchard (Lieut., Som. L.I., T.F.), and to be Hon. Lieut., J. M. Baillard (Sec. Lieut., R.F.A., S.R.), E. A. Bingen (Sec. Lieut., R. Suss. R., T.F.) ; June 15th. B. G. Nichols (Lieut., R.F.A., T.F.), and to be Hon. Lieut., K. T. Kirkby (Sec. Lieut., R.F.A., S.R.), F. W. Palmer, V.C., M.M. (Temp. Sec. Lieut., R. Fus.) ; July 1st.

Second Lieutenants (late General List, R.F.C., on prob.) are confirmed in their rank as Second Lieutenants, Observer Officers :—E. G. Emery, T. L. James, J. W. Hogan, Geo. Williams ; May 26th. N. C. Macdonald, E. G. T. Chubb ; May 28th. R. H. Trelease, T. B. Lowton ; June 22nd. C. K. David ; June 25th. B. Johnson, A. B. Fee ; June 26th. C. B. Edwards ; July 2nd. D. H. Murray ; July 4th. J. J. Rowe, L. E. Mitchell, E. P. Collingburn, C. H. Cutting, W. Smith, E. A. Shearing, C. R. French ; July 6th. P. R. Pierce ; July 9th.

The following are granted temporary commissions as Second Lieutenants, Observer Officers :—H. Bates (Prob. Flight Officer, late R.N.A.S.) ; April 1st. F. H. Webb, M.M. (Temp. Sec. Lieut., R. War. R.) ; May 18th. W. Mellor (Sec. Lieut., W. York R., T.F.) ; May 26th. J. R. Jackman (Lieut., W. Rid. R., T.F.), and to be Hon. Lieut., H. Tasker (Sec. Lieut., W. York R., T.F.) ; May 28th. J. M. Mackie (Lieut., Manitoba R., C.E.F.), and to be Hon. Lieut. ; June 9th. C. M. McGorrery (Temp. Lieut., A.S.C.), and to be Hon. Lieut. ; June 17th. S. Hodgson (Sec. Lieut., Suff. R., S.R.), A. C. Guthrie (Temp. Sec. Lieut., R.E.), A. B. Dewbury (Lieut., C.F.A., C.E.F.), and to be Hon. Lieut., J. M. G. Bell, M.C. (Temp. Lieut., R.F.A.), and to be Hon. Lieut., A. Westall (Lieut., Manch. R., T.F.), and to be Hon. Lieut., F. I. Rogers (Lieut., Midd'x R., S.R.), and to be Hon. Lieut., T. H. Holmes, (Sec. Lieut., R.F.A.), F. A. D. Vaughan (Sec. Lieut., R. Fus., S.R.), W. G. Greenaway, M.C. (Sec. Lieut., R. Ir. Fus.), H. P. Elliott (Temp. Sec. Lieut., Devon R.) ; June 22nd. E. Hamilton (Lieut., S. Ir. Horse Cav., S.R.), and to be Hon. Lieut. ; June 23rd. J. D. Thomson (Capt. Can. A.P.C., C.E.F.), and to be Hon. Capt., L. C. Baker (Temp. Sec. Lieut., R.W. Kent R.), D. W. Stewart (Lieut., W. Ont. R., C.E.F.), and to be Hon. Lieut. June 25th. A. R. Butler (Temp. Sec. Lieut., R.E.), H. C. T. Gompertz (Sec. Lieut., R.F.A., S.R.) ; June 26th. E. A. Simpson (Temp. Sec. Lieut., R. Ir. Fus.) ; July 2nd. G. Graham-Green (Temp. Sec. Lieut., North'd R.), R. J. Hook, D.F.C. (Temp. Sec. Lieut., Rif. Brig.), P. Allsopp (Sec. Lieut., W. Rid. R., T.F.), W. W. Sproson (Temp. Lieut., Lan. Fus.), and to be Hon. Lieut. ; July 4th. A. G. Hilton (Sec. Lieut., Manch. R., T.F.), A. Benblestein (Temp. Sec. Lieut., S.A.H.A.), E. Hill (Lieut., Cent. Ont. R., C.E.F.), and to be Hon. Lieut., J. N. Hawthorne (Temp. Sec. Lieut., Northn. R.), R. M. Williams (Temp. Lieut., attd. R.W. Fus.), and to be Hon. Lieut., G. H. Gillis (Capt., Can. A.P.C., C.E.F.), and to be Hon. Capt., G. H. P. Whitfield, M.C. (Lieut., R. Ir. Rif.), and to be Hon. Lieut., J. L. C. Sutherland, M.C. (Lieut., R.W. Kent R.), and to be Hon. Lieut., B. Archer (Temp. Sec. Lieut., Northn. R.), A. B. (Bedford (Sec. Lieut., Leic. R., T.F.), W. L. Bing (Temp. Sec. Lieut., E. Kent R.), J. Hackett (Temp. Sec. Lieut., Worc. R.), G. K. Hodgetts (Temp. Sec. Lieut., R. War. R.), B. C. Pearson (Temp. Sec. Lieut., Yorks L.I.), V. S. Gray (Sec. Lieut., Suff. R., T.F.), G. Best (Lieut., Glouc. R., T.F.), and to be Hon. Lieut., A. Dewhirst (Temp. Sec. Lieut., W. York R.) ; July 6th. E. Bottrill (Lieut., Cent. Ont., C.E.F.), and to be Hon. Lieut. ; July 8th. J. Hinchey (Temp. Sec. Lieut., attd. W. Rid. R.), W. A. Hammond (Sec. Lieut., W. Rid. R., T.F.) ; July 9th. B. F. Deane (Lieut., R. Suss. R., T.F.), and to be Hon. Lieut., F. Fletcher (Sec. Lieut., R.F.A., S.R.), H. C. G. Newton, M.C. (Temp. Lieut., R.E.), and to be Hon. Lieut., A. C. J. Payne, M.M. (Temp. Sec. Lieut., R. W. Kent R.), W. G. Shedel (Lieut., R. Fus., S.R.), and to be Hon. Lieut., J. R. Williams (Sec. Lieut., R.W. Fus., T.F.) ; July 13th. A. W. Wyncoll (Sec. Lieut., R. Lan. R.) ; July 14th.

Flight Cadets are granted temporary commissions as Second Lieutenants, Observer Officers :—C. W. Somerville, B. Hickman, W. V. Wood, B. Sayers, T. H. Seymour. F. H. Lythall, P. Robertson ; June 22nd. J. K. Best, W. W. Bradford, A. B. Rattray ; July 5th. A. M. Adam, D. A. Alexander, J. B. Blundell, W. J. Bradshaw, G. Butters, J. C. Cavanagh, L. D. Churchill, T. B. Collis, W. A. Smith, J. H. Thomson, J. V. Lee, W. E. Jackson, H. Edwards, W. R. T. Chamberlain, C. Hancock, F. J. Gallant ; July 6th. W. Moorhouse, M. A. Dunn, N. Wallace, C. G. Hitchcock ; July 11th. J. R. W. Admason, G. Bradbury, E. Brandon, W. J. Carruthers, W. E. China, N. J. Dalgleish, S. H. J. Garne, G. H. Haslam, J. S. Hasdell, B. R. Jones, R. H. Nicholls, G. A. F. Prentice, J. A. Pearson, F. S. Smith, W. C. Saville, T. Stockdale, E. M. Buckley, J. Andrews, E. Calvert, A. H. Puller, R. H. S. Grundy, B. G. Shum ; July 13th.

Lieut. M. K. Jones relinquishes his commission on ceasing to be employed ; July 10th.

Lieut. E. L. Burrell relinquishes his commission on account of ill-health, and is granted hon. rank of Lieut. ; July 17th.

Second Lieutenants relinquish their commissions, having been found permanently unfit pilots or observers :—A. W. McDonald, R. J. H. Lane, J. G. Proger, C. L. H. Johnson ; July 17th.

Administrative Branch.

Capt. A. G. Wright to be Temp. Maj. while employed as Maj. ; April 1st.

To be Temporary Captains while employed as Captains :—Sec. Lieut. (Hon. Lieut.) C. H. Tancred ; May 18th. Lieut. J. R. Nicholls ; May 31st. Lieut. (Hon. Capt.) Q. S. Shirriff to be Lieut., from A. and S.) ; July 5th.

Second Lieutenants resign their Commissions :—H. J. Winter, V. S. Sweetman ; July 17th.

Surname of Lieut. P. Sormani is as now described, and not as in *Gazette* of June 25th.

Technical Branch.

The following are granted Temporary Commissions as Captains :—J. Lanning (Lieut., R.N.V.R.) ; April 3rd. F. McG. Davies (Capt., Saskatchewan R., C.E.F.) ; June 7th.

M. Heckstall-Smith (Lieut., R.N.V.R.) is granted a temp. commn. as Capt. ; April 1st. And to be Temp. Maj. while specially employed ; June 19th.

Capt. K. R. Paterson to be Capt., from A. and S. ; May 7th.

Lieut. (Hon. Capt.) I. P. Millar to be Sec. Lieut. (Hon. Capt.), from A. and S. ; April 10th.

Captains relinquish their commissions on account of ill-health, and are granted hon. rank of Capt. :—D. F. H. MitzFaurice, A. B. Wheldon ; July 17th.

Sec. Lieut. (Hon. Lieut.) F. E. Bray relinquishes his commission on account of ill-health contracted on active service, and retains his hon. rank ; July 17th.

Medical Branch.

C. S. Dowdell is granted temp. commission as Capt. ; June 10th. And not Lieut., as stated in *Gazette*, June 11th.

Lieut. N. F. Stallard to be Capt. ; July 4th.

Memorandum.—Sec. Lieut. O. E. Fleming to take rank and precedence as if his appointment as Sec. Lieut. bore date, March 19th.

London Gazette, July 19th.

The following temporary appointment is made at the Air Ministry :—

Staff Officer, 2nd Class.—(Air) Capt. (Temp. Maj.) H. G. G., Viscount Tiverton, and to retain his temp. rank whilst so employed ; April 15th. (Q.) P. Gadsby (Asst. Commy. of Ordnance and Hon. Capt., A.O.D.) is granted a temp. commn. as Capt., and to be Temp. Maj. whilst so employed, vice Lieut. (Temp. Maj.) L. G. S. Reynolds ; June 25th. Capt. (Temp. Maj.) W. J. Polyblank relinquishes the appointment of Staff Officer, 2nd Cl. ; July 1st.

The following tempoarary appointments are made :—

Group Commander.—Maj. (Temp. Lieut.-Col.) J. C. Halaliam, and to be Temp. Col. whilst so employed ; June 1st.

Staff Officers, 1st Class.—And to be Temp. Lieut.-Cols. whilst so employed :—Maj. E. G. Mackenzie ; May 21st. Maj. R. Money ; June 1st. Lieut. (Temp. Maj.) F. G. D. Hards, D.S.C. ; June 27th. The date of appointment of Lieut.-Col. (Hon. Col.) L. Munro is April 2nd, and not as in *Gazette* of May 3rd.

Staff Officers, 2nd Class.—And to be Temp. Majs. whilst so employed, if not already holding that rank :—Capt. (Temp. Maj.) H. F. A. Gordon ; May 9th. (T.) Lieut. (Temp. Capt.) F. J. Baker ; May 13th. Maj. A. Gray ; May 20th. Capt. F. W. L. V. Fraser, M.C. ; June 1st. F. E. B. Whitfield (Capt., Welsh R., S.R.), and is granted a temp. commn. as Capt. ; June 1st. Lieut. (Temp. Capt.) R. McPhail ; June 17th.

Staff Officers, 3rd Class.—And to be Temp. Capts. while so employed, if not already holding that rank :—Sec. Lieut. (Hon. Lieut.) F. McGuffie ; May 17th. Capt. C. E. Dalton, Lieut. (Temp. Capt.) J. A. Middleton, M.C. ; June 1st. Capt. C. J. Page ; June 6th. Lieut. B. K. O. Mathews ; June 18th. Capt. W. Astell, Lieut. (Temp. Capt.) C. A. Brewster-Joske, M.C. ; June 23rd. (T.)—Lieut. A. W. Chapman ; May 14th. (Q.)—Lieut. (Temp. Capt.) G. R. L. Sweet ; May 21st. (S.)—Lieut. (Temp. Capt.) H. J. Lister ; May 24th. Sec. Lieut. (Temp. Lieut.) H. J. Taplin ; June 13th. The rank of Capt. L. Henshall is as now described, and not as in *Gazette* June 25th.

Flying Branch.

The notification in *Gazette* May 14th regarding Maj. (Temp. Lieut.-Col.) A. C. Barnby is cancelled.

The following Lieuts. (Temp. Capts.) to be Temp. Majs. while employed as Majs., A. and S. :—C. H. Darley, D.S.C. ; July 11th. W. E. Gardiner, D.S.C. ; July 15th.

Lieuts. to be Temp. Capts. while employed as Capts., A. and S. :—G. G. Bell ; June 13th. A. E. Ellis, R. J. Gammon (Hon. Capt.) O. C. W. Johnsen, R. F. Palmer ; June 27th. E. R. H. Beaman ; June 30th. P. Ainsworth, L. H. Browning, D. Colyer, L. Clarke, S. E. Faber, W. S. Reid, A. O. K. Wright, L. H. L. Lindsay-Young ; July 1st. H. A. R. Biziou ; July 2nd. L. R. Warren, R. Stephenson ; July 4th. E. G. Bannister ; July 6th. J. R. Hoopkins ; July 10th.

Lieut. G. E. Randall to be Lieut., A. and S., from (O.) ; May 20th.

Lieuts. to be Lieuts., A. and S., from (O.) :—J. T. G. Murison ; May 31st. H. F. Austin ; June 1st. I. B. Wallas ; June 15th.

Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts., A. and S. :—G. R. Pringle ; April 26th. S. H. Whipple ; April 29th. R. F. Ralph ; May 5th. D. M. Galloway ; May 16th. A. B. Wilkinson, W. L. Brookes ; May 20th. L. G. Lucas ; May 27th. R. H. Gray ; May 28th. S. E. Moss ; May 29th. W. R. Hall ; May 31st. L. G. W. Howles ; June 1st.

S. T. C. Roberts, R. A. P. Johnson; June 2nd. J. E. Phelps; June 3rd. G. A. Brown, J. H. Sims; June 4th. W. T. Jones, E. C. Clarke, P. J. Shaw; June 5th. H. E. Twaits, H. F. Turner, N. H. Marshall; June 6th. F. L. Wraight, G. Lovett; June 7th. G. E. T. Payne, W. A. Rollason, W. L. Stebbins, A. R. McFarlan, L. G. Tearle, C. E. Sunnucks, P. J. Baker, C. N. James; June 8th. H. G. Higgins; June 9th. R. M. Miller, J. Horrocks, A. R. Bell, G. A. Harris, D. G. Higgins; June 11th. R. N. Bell, G. W. Chew, E. Wilman, G. T. Litherland, T. Nolan, R. R. Nelson; June 12th. T. E. Roach, E. A. Brownhill, J. S. Walker, L. D. Lyon, W. S. Emmott, R. F. Lynch, A. Tyler, H. J. Fuller, R. S. Johnston, C. E. Thorpe, A. G. Ely: June 13th. L. Dexter, A. E. Watson, C. M. Barter, J. Macintyre, H. Kershaw, W. A. Harris, R. Mantegazza, T. M Steele, H. E. Grove, E. J. Tilley; June 14th. P. V. Penhallyrick, J. L. Colbourne; June 15th. N. Little; June 17th.

The following are granted temp. commns. as Sec. Lieuts., A. and S.:—F. S. Williams (Lieut., Mon. R., T.F.), and to be Hon. Lieut.; May 18th. G. H. Hunt (Lieut., Sask. R., C.E.P.), and to be Hon. Lieut.; May 31st. W. Ashford (Temp. Sec. Lieut., attd. R.W. Surr. R.); June 1st. H. J. Buist (Temp. Lieut., R. W. Surr. R.), and to be Hon. Lieut.; June 3rd. A. J. Hannah (Temp. Sec. Lieut., High. L.I., S.R.), C. O'Connell, M.C. (Sec. Lieut., Lond. R., T.F.), J. Blackford (Temp. Lieut., M.G. Corps), and to be Hon. Lieut.; June 6th. R. T. Worrall (Sec. Lieut., R.F.A., S.R.); June 10th. J. F. Foster (Lieut., Bord. R., T.F.), and to be Hon. Lieut., A. Heritage (Sec. Lieut., London R., T.F.), L. A. W. Knight (Lieut. Worc. R.), and to be Hon. Lieut., F. A. White, D.C.M. (Lieut., Manitoba R., C.E.F.), and to be Hon. Lieut., D. M. Berry (Temp. Capt., attd. R. Fus.), and to be Hon. Capt.; June 11th. E. Hodgson (Lieut. K. L'pool. R., S.R.), and to be Hon. Lieut., G. H. Macaskill (Sec. Lieut., Essex R.), J. D. Irvine (Temp. Sec. Lieut., R. Scots), G. E. Manning, M.C. (Temp. Lieut., E. Surr. R.), and to be Hon. Lieut., A. S. Moyniham (Sec. Lieut., R.F.A.), S. R. Grover (Lieut., Gord. Highrs., S.R.), and to be Hon. Lieut.; June 12th. W. E. Whitton (Lieut., L'pool. R.), and to be Hon. Lieut.; F. H. Moore (Temp. Lieut., attd. R.W. Surr. R.), and to be Hon. Lieut.; June 13th. A. W. Beamand (Temp. Capt., A.S.C.), and to be Hon. Capt.; June 14th.

Lieut. (Observer Officer) C. H. Trotter to be Lieut. (A. and S.); June 23rd.

H. S. Gros (Lieut., Manch. R.) is granted a temp. commn. as Sec. Lieut. (O.), and to be Hon. Lieut.; April 14th.

Flight Cdts. are granted temp. commns. as Sec. Lieuts. (A. and S.):—G. R. Marsh, F. W. Fryer, A. F. Webster, J. R. A. Savidge, C. Kirkwood; June 12th.

Prob. Flight Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lieuts. (A. and S.):—W. S. Haney, H. F. Farncourt; June 5th.

The notification in *Gazette* dated July 5th with reference to E. Nordberg is cancelled.

Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (Observer Officers):—W. Jacklin; May 25th. J. Tullock; May 26th. B. T. Gillman, L. Sharp; May 29th. G. W. Lambert; June 1st. R. K. Pollard; June 7th. S. R. Payne; June 9th. H. Thompson; June 10th. F. W. Chester, J. MacD. MacKinnon; June 11th. E. M. Nicholas; June 12th. W. H. A. Rickett; June 16th. J. Forsyth; June 21st. C. G. Smith; June 30th. R. V. Hepburn; July 1st. H. R. Owen, J. C. Sanders, H. Rapier; July 3rd.

Flight Cadets are granted temp. commns. as Sec. Lieuts., Observer Officers:—D. E. Haighton; July 5th. J. H. Cooke, C. H. Ford, R. E. E. Hasell, G. R. Howard, B. P. Kenkins, H. B. Shaw, T. Brown, D. E. Chase, G. H. Wilson, N. P. Wood, W. H. Telfer, D. S. Hamilton, H. Roberts, J. Skidmore, H. Lawrence, A. B. Sangster; July 6th. F. W. Woolley; July 8th. H. Ridley, C. A. Atkins, J. Churchill, E. G. Cook, L. G. Cooper, D. Davenport, F. G. Davies, A. A. Douglas, S. L. Dunlop, F. C. B. Eaton, E. H. Edgell, J. W. Jones, W. R. Sellar, P. Willis, G. L. P. Drummond, L. J. Edwardes; July 10th. H. W. Hopton, A. D. Hollingworth; May 18th. C. Gardner, A. C. Garwood, W. A. Creig, D. B. Hallie, W. W. Harrison, J. D. Hall; July 13th. F. X. Jackson, J. A. Lee, A. G. Maclauchlan; July 17th.

The following are granted temp. commns. as Sec. Lieuts., Obs. Offrs.:—J. A. A. Malhiot (Lieut., Can. Rly. Services, C.E.F.) and to be hon. Lieut.; May 26th. G. Webb (Temp. Sec. Lieut. S. Staff. R.); June 4th. V. W. Allen, M.C. (Sec. Lieut., S. American Inf.); June 8th. J. M. Hughes (Lieut., S. Lan. R.), and to be hon. Lieut.; June 15th. N. C. K. Auster (Temp. Sec. Lieut., S. Wales Bord.); June 29th. E. Vickers (Sec. Lieut., W. Rid. R.); G. D. Dodds (Lieut., Durh. L.I., T.F.), and to be hon. Lieut. I. MacL. Moffatt (Sec. Lieut., R.G.A., S.R.); July 1st. A. E. Ealding (Temp. Sec. Lieut., L'pool. R.), F. C. Smith (Temp. Sec. Lieut., N. Lan. R.), W. T. Rees (Sec. Lieut., Dorset R.), F. Godson (Lieut. Lincs. Yeo., T.F.), and to be hon. Lieut., J. Evans, M.M. (Temp. Sec. Lieut. E. York R.); July 3rd.

Capt. A. R. Fortin to relinquish his commn. on ceasing to be employed; March 12th.

Lieuts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lieuts.:—W. Gardner; July 6th. L. T. Clemence, Lieut. E. A. H. Viscount Exmouth; July 20th.

Administrative Branch.

W. Bindloss (Temp. Capt., L'pool. R.) is granted a temp. commn. as Lieut., and to be hon. Capt.; June 14th.

Lieut. J. P. Greenwood to be Lieut. from (O.).

S. Wyatt (Lieut., R.M.I.I.) is granted a temp. commn. as Lieut.; May 23rd.

The following are granted temp. commns. as Sec. Lieuts.:—E. Powell; July 9th. A. C. E. F. Kennish (late Lieut., Oxf. and Bucks L.I.), and to be hon. Lieut. July 12th. L. E. S. Barrett; July 16th. E. Codyre (late Capt., Army Pay Dept.), and to be hon. Capt.; July 20th.

Sec. Lieut. A. C. Blackwell resigns his commn., and is granted the hon. rank of Sec. Lieut.; Sec. Lieut. A. S. M. Law resigns his commn.; July 20th.

Technical Branch.

Lieut. (hon. Capt.) J. H. Rutherford to be Temp. Maj. while employed as Liaison Offr.; July 6th.

Sec. Lieut. W. H. Lawrence resigns his commn.; July 20th.

Medical Branch.

The following are granted temp. commns. as Capts.:—R. G. Maglione, I. M. Thomson; July 15th. A. H. Todd; July 17th.

The following are granted temp. commns. as Lieuts.:—G. Dunderdale, J. P. Hennessy; July 12th. F. Gill, J. S. Harbinson, G. W. Harbottle, J. J. O Mullane, M. J. Whelton; July 15th. A. G. Graham; July 18th.

Memorandum.—The date of appointment to a temp. commn. of Lieut.-Col. (hon. Col.) L. Munro is April 1st and not as in *Gazette*, May 3rd.

Sec. Lieut. W. E. T. Williams to take rank and prec. as if his appointment as Sec. Lieut. bore date June 3rd.

Sec. Lieuts. resign their commns.:—W. S. Race, Lieut. S. Simons, Lieut. C. G. Abell; July 20th.

Royal Flying Corps (Military Wing).

London Gazette Supplement, July 16th.

General List.—To be Temp. *Second Lieutenants.*—Col. G. J. Duncan, from R.W. Fus.; March 19th. Actg.-Corpl. J. Regester, from Norf. R.; March 27th. Pte. A. E. Marsh, from A.O.C.; March 30th.

London Gazette Supplement, July 17th.

General List.—The following to be Temporary Second Lieutenants:—Pte. H. W. Spalding, from Suff. R. (T.F.); March 23rd. Pte. S. E. Booth, from R.A.M.C., (T.F.); March 24th. Pte. A. Sherrett, from R. Highrs.; March 27th. Sergt. W. Sutcliffe, from A.S.C.; March 28th. Pte. F. L. Steggall, from R.A.M.C. (T.F.); March 30th. Gnr. W. Price, from Motor Machine Gun Batt.; March 31st.

London Gazette Supplement, July 18th.

Supplementary to Regular Corps.—G. C. Goode to be Sec. Lieut. (on prob.); March 2nd, 1917.

London Gazette Supplement, July 19th.

Flight Commander.—Capt. H. W. Kingdon, Hamps. R. (T.F.), from a Flying Officer; Jan. 20th.

Flying Officer.—Temp. Sec. Lieut. (on prob.) C. Wiseley, Gen. List, and to be confirmed in his rank; Feb. 21st.

Flying Officer (Observer).—Temp. Sec. Lieut. W. F. Steedman, Gen. List; Sept. 17th, 1917.

Adjutant.—Capt. P. Musker, Yeo. (T.F.); March 6th.

Special Appointments (graded as Park Commanders).—And to be Temp. Majs. whilst so employed:—Capt. C. E. Prince, Yeo. (T.F.), from an Experimental Officer, 1st Cl. (graded as an Equipment Officer, 1st Cl.); Lieut. (Temp. Capt.) G. Jacques, S.R., from an Equipment Officer, 1st Cl.; Dec. 14th, 1917.

Equipment Officer, 2nd Class.—Temp. Sec. Lieut. A. G. D. West, Gen. List, from the 3rd Cl., and to be Temp. Lieut. whilst so employed; Dec. 14th, 1917.

Schools of Military Aeronautics.

Assistant Instructor (graded as an Equipment Officer, 2nd Class).—Temp. Lieut. H. D. Legge, Gen. List, an Equipment Officer, 3rd Cl.; Sept. 4th, 1917.

General List.—To be Temp. Sec. Lieuts.:—Flight Staff Sgt. C. T. Skipper, from R.F.C.; Feb. 20th. Act. Sgt. R. C. Van der Ben, from A. Ord. Dept.; Mar. 24th. Cpl. J. I. Elliott, from High. L.I.; May 26th. Lce.-Cpl. F. C. Brackenborough, from R.E.; Mar. 27th. M. H. Edmunds to be Temp. Sec. Lieut. (on prob.); Jan. 7th.

London Gazette Supplement, July 20th.

Flying Officers.—Temp. Sec. Lieuts. (on prob.), Gen. List, and to be confirmed in their rank: H. W. Le Blond; Feb. 9th. F. L. Gall; Feb. 10th. R. G. Searson; Feb. 14th. J. D. Davis; Feb. 24th. G. P. McNaughton; Feb. 28th. A. Buckle; March. 14th. A. G. Spencer; March 29th.

Aeronautical Inspection Department.

London Gazette Supplement, July 19th.

To be Temp. Hon. Lieuts. while employed as Asst. Insprs., Aeronautical Inspn. Dept.:—G. J. V. Bailey, R. G. Underwood, H. Yates; Oct. 1st, 1917. A. Macfarlane; June 1st, 1917.

Aircraft in the French Offensive.

WRITING on the commencement of the French offensive, the Special Correspondent of the *Havas* says:—

"Our bombing aeroplanes intervened in the battle in considerable formations. One of our groups which carried out two consecutive attacks comprised over 100 machines. Our fighting aeroplanes ceaselessly machine-gunned masses of enemy troops. One squadron succeeded in preventing for a quarter of an hour all access to a bridge which a very important assembly of troops was trying to cross; not a single man was allowed to pass during that time. The exploits of our airmen were all the more remarkable because our squadrons had great difficulty in flying owing to the very low clouds, in traversing which they lost liaison with their comrades and suddenly found themselves in the midst of enemy groups."

A German Aerodrome Destroyed.

INFORMATION has been received in Amsterdam to the effect that a fire has completely destroyed the new aerodrome erected by the Germans near Nivelle, in Belgium. Sheds containing 22 aeroplanes were entirely consumed. The fire is said to have been caused by revolutionaries in the German Army.

A German Munition Factory Blown Up.

THE *Tyd* says it is reported in South Limburg that a zinc oxide factory at Rothem (Belgian Limburg), which had been converted into a munition factory, has been blown up with the bombs dropped upon it by aviators.

A Zeppelin Wrecked?

A MESSAGE from the Dutch frontier to the *Nieuwe Rotterdamsche Courant* states that on the evening of July 15th a Zeppelin fell in flames just over the German frontier in the direction of Dalhem.

Smoke Cloud Camouflage.

DEALING with the work of the aviators in the French advance, Mr. G. H. Perris in the *Daily Telegraph* says:—

"Five bridges established on July 15th west of Dormans were destroyed the following morning by aviators and by artillery. Despite mist and the smoke clouds with which the enemy sought to hide his passage of the Marne, the French airmen have, from the beginning, carried out with striking success their vital work of scouting.

"Fourteen tons of explosives were dropped on July 15th on the German lines of communication north of the Marne. Forty-one enemy planes were brought down and three sausage balloons destroyed, three of them within five minutes by one aviator, Lieut. Bourgade. A squadron of chasers completely stopped a large body of German troops from getting over one of the bridges for a quarter of an hour by machine-gun fire."

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

Admiralty, July 13th.

"In home waters, during the period July 8th-10th, anti-submarine, hostile aircraft, and escort patrols have been maintained. During raids on enemy docks and works eight tons of bombs have been dropped. One enemy aircraft was destroyed. All our machines returned safely. Hostile aircraft attacked Dunkirk during the night of 7th-8th; no material damage was done. Information has been received that an aerial attack was carried out on Constantinople on July 7th. Half a ton of bombs was dropped. All our machines returned safely. Despatches now to hand from the Mediterranean and Aegean contain information of considerable activity on the part of aircraft working under the Navy in these waters. British machines, in co-operation with Greek naval machines, have carried out anti-submarine patrols and reconnaissances from the various stations in the Aegean. Kuleli Burgas bridge and station on the Oriental Railway in Bulgaria—upon which a quarter of a ton of bombs was dropped recently—are now known to have been badly damaged."

General Headquarters, July 13th.

"Low clouds and heavy rain storms prevailed on the Western front on July 12th. Enemy aircraft showed no activity, and our own machines could only carry out observation work for the artillery during the brief intervals of brighter weather. There were no combats or casualties. At night, in spite of high wind and an overcast sky, our airmen carried out some useful reconnaissances and dropped four tons of bombs."

General Headquarters, July 14th.

"Twelve enemy aeroplanes were destroyed by us on July 13th, and four driven down out of control. Three of our machines are missing. A good deal of reconnaissance and observation work was carried out by our airmen in fine intervals, and four and a half tons of bombs were dropped by them during the day. On the night of July 13th-14th, our bombing machines were very active. Over 1,100 bombs, weighing in the aggregate 19 tons, were dropped upon enemy camps, railway lines, trains, transport and billets. All our night-flying machines returned safely."

General Headquarters, July 15th.

"On the morning of July 14th our aeroplanes completed several reconnaissances and carried out much observation for our artillery. The afternoon was wet and stormy. The sidings at Roulers, the ammunition dumps at Warneton and Baupaume, the docks at Bruges, and dredging parties at Zeebrugge were heavily bombed. Nine hostile machines were brought down, and three balloons shot down in flames. Five of our machines are missing."

Headquarters R.A.F., Independent Force, July 16th.

"On the 15th inst. the railway sidings and sheds at Offenburg, and a hostile aerodrome, were successfully bombed, good bursts being observed. On the 16th inst. our machines attacked the railway sidings at Thionville. Several bursts were observed on the railway; a large fire was started, and several heavy explosions ensued. All our machines returned safely."

General Headquarters, July 16th.

"On the 15th inst., storms again handicapped work in the air. Our machines dropped a few bombs and kept the front under observation. Six hostile machines were brought down by us. One of our machines is missing. A violent thunderstorm prevented night bombing after midnight. Prior to this hour over 4 tons of bombs were dropped on Seclin railway station and on hostile billets. All machines returned."

War Office, July 16th.

"*Italian Front.*—The weather recently has been good, and our aerial activity has consequently increased. Between July 4th and 15th inclusive, our Royal Air Force have destroyed 35 enemy aircraft. One of our aeroplanes has failed to return."

General Headquarters, July 17th.

"On the 16th repeated thunder and rain storms prevented continuous aerial work. Our aeroplanes took advantage of the fine intervals to carry out reconnaissance work with the artillery and bombing. Thirteen tons of bombs were dropped on hostile aerodromes, ammunition dumps, the Mole at Zeebrugge, and villages used by the enemy as billets, among them Estaires and Merville. Ten enemy machines were brought down in air fighting, and four others were driven down out of control. In addition, six hostile balloons were shot down in flames. Nine of our machines are missing. After dark, in spite of bad weather, our aeroplanes dropped over 500 bombs on the railway junctions at Seclin and on various billets. All the machines engaged on this work returned. One of the enemy's large bombing machines came down behind our lines."

Headquarters R.A.F., Independent Force, July 18th.

"During the night of July 16th-17th our machines bombed the works at Hagendingen and the Burbach works. Good results were observed and appreciable damage done. A hostile aerodrome was also bombed with good results. All our machines returned safely.

"On the 17th inst. our machines successfully attacked the railway and sidings at Thionville. All our machines returned safely."

Admiralty, July 18th.

"The Secretary of the Admiralty announces that during the period July 11th-17th inclusive, Royal Air Force units working with the Navy in home waters have maintained anti-submarine and escort patrols. Bombing raids have been carried out, when weather was favourable, with good results. Enemy destroyers have been sighted off the Flanders coast on several occasions and attacked with bombs. A direct hit was obtained on one large destroyer. Our formations have also attacked destroyers with machine-gun fire. On one of these occasions five enemy seaplanes approached at beginning of action, but immediately withdrew. Enemy aircraft have been active and have attacked our bombing and patrol formations. Three hostile machines have been destroyed and four driven down out of control. Two of our machines are missing and two collided and crashed. One of our machines on anti-submarine patrol observed an enemy seaplane upside down in the sea, no occupants. Enemy attempts to salve the torpedo-boat destroyer recently sunk close to Zeebrugge by a bomb from one of our machines have been greatly hindered by our bombing formations."

General Headquarters, July 18th.

"On the 17th inst. the weather was cloudy at first, but improved later, allowing a considerable amount of aerial reconnaissance, photography, and artillery work to be accomplished by us. Eleven and a half tons of bombs were dropped during the day on enemy dumps and railways and on the Brugeoise Works. Comparatively few enemy machines were encountered. We shot down three and drove one down out of control. We lost one machine. We also shot down six hostile balloons in flames. Severe thunderstorms prevented our machines from carrying out night bombing."

War Office, July 18th.

"*Palestine.*—On July 15th and 16th effective bombing raids were carried out against El Kutrani railway station and Amman station respectively, troop trains, camps, and enemy aerodromes being hit and ground targets engaged with machine-gun fire."

War Office, July 19th.

"*Salonica.*—During the past 10 days three enemy aeroplanes have been destroyed and three driven down out of control."

Headquarters R.A.F., Independent Force, July 19th.

"Our bombing squadrons were again active during the night of July 18th-19th. The Benz works at Mannheim, the railway station at Heidelberg, and blast furnaces at Burbach and Wadgassen were attacked. At the Benz works a fire broke out. A hostile aerodrome was attacked, one of the hangars receiving a direct hit. Two trains were hit by bombs, brought to a standstill, and then subjected to machine-gun fire. On the 19th inst. the powder factory at Oberndorf was attacked; bursts were observed on buildings in the factory. All our machines returned safely."

General Headquarters, July 19th.

"On the 18th inst., in spite of very changeable weather, a good deal of work was accomplished by our aeroplanes both in reconnaissance photography and bombing. Much of the bombing was done from a low height, the targets including ammunition dumps around Armentières and Méricourt the railway stations at Rosières and Bray, and the docks at Bruges and Ostend. Eight hostile machines were brought down in fighting, and one other was shot down by our anti-aircraft fire. Seven of our machines are missing. During the night our bombing machines dropped eight tons of bombs on the Mons-Valenciennes railway, and an additional six tons on the railways at Courtrai, Seclin, and Lille. Two of our machines failed to return."

General Headquarters, July 20th.

"Early on the 19th inst. several long reconnaissances were carried out by us and many photographs taken of the enemy's back area. Work with the artillery and bombing were continued throughout the day. Over 17 tons of bombs were dropped on hostile ammunition dumps, railway stations, and aerodromes. In one of the raids on a hostile aerodrome the machines dropped their bombs from between 100 and 500 ft. One pilot landed on the aerodrome and swept the hangars with his machine guns before rising again. Ten hostile machines and six balloons were brought down. Seven of our machines are missing. After dark, although there was a strong west wind blowing and low clouds continually drifting up, our machines dropped 14 tons of bombs on the railways between Mons and Valenciennes and on the stations at Cambrai, Lille, and Seclin, a direct hit being obtained on a train at the last-named place. All machines returned."

Headquarters R.A.F., Independent Force, July 20th.

"On the night of July 19th-20th our bombing squadrons carried out several air raids. At Mannheim attacks were made on the Badische Anilin und Soda Works, the Lanz chemical works, the Gebrüder Guilini chemical factories, and the docks. A fire broke out in the Badische aniline works, and clouds of smoke rose from the Gebrüder Guilini factories. Two hostile aerodromes were again bombarded with good effect. Trains and road transport were attacked from low altitudes with bombs and machine guns. One of our machines did not return. On the day of the 20th attacks were made on the railway and factories at Offenburg and Oberndorf. At the former one of the large engine sheds was hit, and at Oberndorf bursts were observed on factories and railways. Our formations were heavily attacked. One hostile machine was destroyed and two were driven down out of control. Three of our machines have not returned."

Admiralty, July 20th.

"A detachment of the Grand Fleet operating off the Jutland coast on the morning of Friday, July 19th, has now returned to the base, having carried out a bombing attack on the Zeppelin sheds at Tondern, Schleswig, by Royal Air Force machines despatched from the vessels. In the first flight, which was made in the early morning, all machines reached their objective and made direct hits on a large double shed, which was completely destroyed, the conflagration rising to 1,000 ft. A second flight followed the first, all machines but one reaching their objective. A large shed was observed to have a hole of considerable dimensions in the roof, from which a volume of smoke was being emitted. A second shed was bombed and direct hits were made, but owing to fierce anti-aircraft fire and to the smoke of the first shed it was not possible to observe whether destruction of the second shed was complete. The attacks were made from a height of 700 ft. to 1,000 ft. Four of our machines failed to return, and information has been received that three of these machines landed in Danish territory. All ships returned without any casualties."

French.

Paris, July 16th.

"Our Air Service has taken an important part in the battle engaged since July 15th on the front of the Marne and Champagne. In spite of unfavourable atmospheric conditions, our observers did not cease to fly over the German lines during the days preceding the attack. Thanks to their sustained vigilance, they managed to furnish valuable information with regard to the offensive, and to indicate its extent. During the first hours of the battle our airmen intervened actively, notably on the Marne. In spite of the thick curtains of smoke which hid the bridges thrown across by the enemy, our crews discovered them, and attacked them, flying at a low altitude. They succeeded in destroying by bombs two of these bridges loaded with troops, who were hurled into the river, while attacks with machine-guns and bombs were showered on convoys and columns debouching on the north bank. Fourteen tons of projectiles were used in this way during the day at various points of the front with complete success, and the attacks were continued during the night. Fourteen tons of projectiles dropped on the enmey's bivouacs and points of assembly and concentration caused several fires and much damage. Our airmen, in addition, fought a hard battle against the enemy's Air Service, and obtained good results. Forty-one enemy aeroplanes were shot down or driven down out of control, and nine captive balloons were set on fire. In less than five minutes Sub-Lieut. Bourjade personally destroyed three of these balloons. Lastly, the aerial observation service did not cease to mark the position of our troops, and especially that of the enemy, and to direct our artillery fire with great effect. Sub-Lieut. Haegelin shot down his 10th machine on July 10th. Up to that date he counted to his credit four captive balloons and six aeroplanes officially confirmed."

Paris, July 18th.

"Our Aviation Service continued to play a brilliant part in the battle during July 16th and 17th. On the 16th our bombing crews did not cease to attack the Marne bridges and to hamper the passage of the enemy troops. The latter, attacked by machine-gun and bomb at the moment when they were debouching on the northern and southern banks, suffered heavy losses, and were compelled to scatter on several occasions. The bridge thrown by the enemy in front of Dormans was subjected to a flood of projectiles and collapsed. The convoys which were crossing it were engulfed in the river. Our bombers also carried out expeditions against the cantonments, stations, munition depôts, and concentration points behind the enemy front. Twenty-one tons of explosives were dropped in the day-time and 14 tons during the night. Our observers noted great damage at various points; a violent explosion at the station of Maison Bleue and fires in the stations of Coucy, Les Etapes, and Bazoches. Our aeroplanes, with their customary intrepidity, fought numerous combats above the enemy lines. Twenty-nine German machines were felled or disabled and five captive balloons were set on fire. On the 17th, notwithstanding a violent wind and torrential showers, our crews took the air and obtained good results. Twelve German aeroplanes were felled and four captive balloons destroyed. During attacks on the Marne crossings about 58 tons of explosives were employed."

"*Balkans.*—In Albania our troops pushed forward advanced elements on to the Gors Crest. On the Col de Langa Allied airmen bombarded the aerodromes of Rudove and Kanatlarci. In aerial fighting an enemy aeroplane was shot down and two others were obliged to land."

Paris, July 19th.

"During Thursday our Air Service, in collaboration with British squadrons, continued its work on the whole battle front. Twenty German aeroplanes were shot down or driven out of control by our pilots, and two captive balloons set on fire. On their side the British crews destroyed seven enemy machines. Our bombing groups carried out their expeditions against the crossings of the Marne. One foot-bridge west of Reuil was bombed and destroyed. Cantonments and assemblies of troops at Oulchy-le-Château, in the Vauxbuin Ravine at Fère-en-Tardenois, and in the region of Œuilly were attacked with machine guns and bombs, and broken up. The railway stations behind the front were pelted with projectiles. Fires broke out at the railway stations of Amifontaine and Fismes, and big explosions were observed at Pontavert. Twenty-two tons were thus utilised during the day and 21 during the following night. The British crews which took part in these operations dropped for their part 2½ tons of explosives with excellent results."

Italian.

Rome, July 13th.

"Though the atmospheric conditions were not satisfactory aerial activity was yesterday very intense. Ten enemy machines were brought down. Lieut.-Aviator Silvio Scaroni has reached his 30th victory in the air.

"A hostile aeroplane was brought down over Feltre."

Rome, July 14th.

"Three enemy aeroplanes were brought down during air fighting."

Rome, July 15th.

"Six enemy machines were brought down."

Rome, July 16th.

"During the day and night our own and Allied airmen and airships of our Army and Navy were very active. Twelve enemy aeroplanes were brought down."

Rome, July 17th.

"Military objectives in the enemy's front lines and rear areas were attacked by aeroplanes and airships. Two hostile aeroplanes were brought down."

Rome, July 18th.

"During the night of the 16th-17th inst. and yesterday morning airships of the Italian Royal Navy and powerful flights of bombardment planes dropped with ascertained effectiveness 8,000 kilos (8 tons) of bombs on military works in the maritime fortress of Pola.

"Minor bombardment actions were carried out last night on vital centres in the enemy's lines of communication. Three hostile machines were brought down in air fighting."

"A large squadron of Italian seaplanes this morning bombarded the military works at Antivari and the vessels moored there. Serious material damage was observed. All the airmen returned.

"The Chief of the Naval General Staff announces that the British Air Service has effectively contributed in the Adriatic in attacks on enemy naval bases. While the Italians were acting against Pola and Lagosta yesterday a British squadron effectively bombarded military works at Cattaro. All the British airmen returned to their base."

Belgian.

Havre, July 1st.

"On June 30th Sub-Lieut. Coppens brought down in flames three enemy observation balloons."

Havre, July 15th.

"Sub-Lieut. Coppens set fire to a German balloon—his 14th success."

German.

Berlin, July 11th.

"Five American aeroplanes out of a squadron of six which intended to make a raid on Coblenz fell into our hands. The crews were taken prisoner."

Berlin, July 12th.

"Lieut. Neckel has obtained his 20th aerial victory. The sixth aeroplane of the American squadron which was flying to Coblenz, as reported yesterday, has fallen into our hands after being shot down."

Berlin, July 13th.

"During the month of June 468 hostile aeroplanes and 62 captive balloons were shot down on the German front. Ninety-two of these aeroplanes were brought down by our anti-aircraft guns. Of the 468 aeroplanes 217 are in our possession; the rest were observed to fall beyond the enemy's positions. We have lost 153 aeroplanes and 51 captive balloons in battle."

Berlin, July 14th.

"The weather clearing up, our bombing squadrons made night attacks against the enemy railway works on the French coast between Dunkirk-Boulogne-Abbeville, and in the region of Lillers-St. Pol-Doullens, as well as in the region of Crepy-en-Valois and Villers-Cotterets."

Berlin, July 15th.

"Lieut. Loewenhardt obtained his 35th aerial victory."

Berlin, July 16th.

"In spite of low clouds and a high wind the aerial fighting forces were active. From a low altitude the airmen, with bombs and machine-guns, attacked in the battle on the ground. Yesterday they brought down over the battlefield 31 enemy aeroplanes and four captive balloons. Lieuts. Loewenhardt and Meckhoff achieved their 36th victory, and Lieut. Bolle his 21st."

Berlin, July 17th.

"A further 36 enemy aeroplanes and two captive balloons were shot down yesterday over the battlefield. Lieut. Meckhoff obtained his 37th and 38th aerial victories, Lieut. Loewenhardt his 37th, 1st Lieut. Loerzen his 26th, Lieut. Bolle his 22nd, and Sergt. Thom his 21st."

Berlin, July 18th.

"Twenty-three enemy aeroplanes were shot down yesterday. Lieut. Jacob obtained his 23rd aerial victory."

Berlin, July 19th.

"Only some material damage was done in this morning's aerial attack on the airship establishments near Tondern (Schleswig-Holstein)."

"Enemy columns which were endeavouring to reach the battle-field were the objectives of our successful battleplanes. Our chasing planes shot down 32 of the enemy's aeroplanes. Lieut. Loewenhardt obtained his 38th and 39th aerial victories, Lieut. Bolle his 23rd and 24th, and First Lieut. Goehring his 22nd."

Berlin, July 20th.

"Yesterday again 30 enemy aeroplanes and seven captive balloons were shot down. Lieut. Loewenhardt obtained his 40th and 41st, Lieut. Meckoff his 39th, Capt. Berthold his 38th, First Lieut. Lörzer his 27th, Lieut. Jakobs his 24th, and Lieut. Könnecke his 22nd aerial victory."

AVIATION IN PARLIAMENT.

The R.A.F. Uniform.

MR. NEEDHAM in the House of Commons, on July 17th, asked the Under-Secretary of State to the Air Ministry whether he is thoroughly satisfied from experience as to the fastness of the new colour of the uniform recently authorised, and whether he is aware that it is not as useful a colour as khaki for hard wear, and that it will much sooner present a shabby and worn appearance owing to its lesser resistance to dirt and stains?

Colonel Gibbs: Tests applied to the cloth for the new uniform for the Royal Air Force show that the dye stands exposure well, and that the cloth is capable of being easily cleaned. The colour was selected after full consideration as the best distinctive colour available.

Mr. Rowlands asked the Under-Secretary whether he is aware that an Order has been issued by the Air Minister that members of the Royal Air Force are not to wear chevrons, although qualified the same as the men in the other Services, and, if so, if he will state the reason for this Order?

Colonel Gibbs: I would refer my hon. friend to the reply given on Monday to a question by the hon. and gallant Member for Ipswich.

Mr. Rowlands: May I ask whether the fact is that because dangerous flying is done by men at home as distinguished from men abroad some distinctive mark is not to be given to those who undertake dangerous work at home?

Colonel Gibbs: Perhaps my hon. friend will put down another question.

Alliance Aeroplane Works.

MR. WALTER ROCH asked the Minister of Munitions if he can state the terms on which the Alliance Aeroplane Works of Messrs. Waring and Gillow have been taken over by the Government; if he can state the statutory or other authority under which such works were taken over; and whether it is his intention to take over any other establishments in the same manner and on the same conditions?

Mr. Kellaway: The terms on which these works were taken possession of are still under consideration. Possession was taken under Regulation 8 of the Defence of the Realm Regulations. The question of taking similar action in other instances must depend on the facts of each case as it arises.

Mr. Roch: Do the Government contemplate purchasing this on behalf of the Government?

Mr. Kellaway: I would rather make no statement while the question is under negotiation.

Mr. Roch: Is the same management to be retained?

Mr. Kellaway: That also is a point with regard to which a definite answer cannot be given at the moment.

Mr. Roch: If nothing has been settled, why was it announced that they had been taken over by the Government?

Mr. Pringle: Is it not a fact that this was a controlled establishment before, and has any difference been made by the announcement made by the Minister of Munitions?

Mr. Kellaway: A substantial difference has been made. One result is that the men are now at work.

Mr. Pringle: Is there any difference in the management or control of this establishment, or was the announcement simply made for the purpose of getting the men back to work without making any alteration at all?

Mr. Kellaway: The details are under consideration, and there will certainly be a difference made in the conditions.

Mr. Pringle: When will the hon. member be able to make a statement as to the change?

Mr. Kellaway: If my hon. friend will put down a question, I will endeavour to get the information.

Aerodromes and Irish Labour.

MR. WILKIE asked the Prime Minister whether he is aware that, while young men are being brought from Ireland to work in the building of aerodromes, older men with the necessary skill and capacity for the work are being taken into the Army; and whether, in view of the feeling aroused by this policy, some better co-ordinated efforts between the Departments concerned can be evolved for securing, on the one hand, the necessary men for the Army and, on the other, the requisite labour for war work?

Sir A. Geddes: My right hon. friend has asked me to reply. I am not aware that young men are being brought from Ireland to work on the building of aerodromes. On the contrary, instructions were issued on April 6th, whereby no Irishman of military age is allowed to be engaged in Ireland for work in Great Britain unless he is engaged through an Employment Exchange for work in agriculture or is a discharged sailor or soldier not liable for further military service. Further instructions were issued last week to the effect that the liability to military service of Irishmen between 18 and 51 years of age who come to work in Great Britain except under these conditions is to be enforced.

Mr. Herbert Samuel: May I ask the right hon. gentleman whether the last part of his answer refers only to men who are being brought over from Ireland in the future or whether it has any retrospective effect?

Sir A. Geddes: It has no retrospective effect in the case of men who have been brought over through Government agency for work of national importance. Irishmen who have come over on their own initiative without any arrangement being made have always been liable to be called up for military service under the Military Service Acts.

Mr. Pringle: Will not Irishmen be subject to the comb-out and the clean cut under the same conditions as Englishmen, Scotsmen, and Welshmen?

Sir A. Geddes: I am afraid that there must be some misunderstanding with regard to the present practice, if I have understood my hon. and learned friend's question correctly. Irishmen, as such, in this country are not entitled to special protection. They are British subjects. Irishmen brought over on an understanding given by the Government receive the benefit of that undertaking. If it is impossible for them to continue in this country in fairness to other men of the same age, they are sent back to Ireland, where they resume their normal status.

Mr. Pringle: Is the right hon. gentleman going to observe an undertaking in respect of Irishmen while he destroys similar pledges and undertakings given to Englishmen, Scotsmen, and Welshmen?

Sir A. Geddes: I know of no undertaking given to Englishmen, Scotsmen and Welshmen which as been destroyed in connection with this matter of recruiting, but if my hon. and learned friend has any case in point perhaps he will give me information about it

No Badge for Air Raid Victims.

MR. R. MCNEILL, on July 8th, asked the Under-Secretary of State for War whether the Government propose to follow the example of the French Government in instituting a special decoration or badge for civilians who have been mutilated or maimed by enemy action during the war, having regard to the fact that numbers of men and women have so suffered to whom it would be a gratification to have their cases differentiated from cases of misfortune by accident unconnected with the War?

Sir G. Cave: My right hon. friend has asked me to reply to this question. The Government do not propose to institute a special decoration or badge for civilians injured by enemy action. I understand that no badge is given to persons injured while engaged on national work, and it does not appear that persons injured by the enemy have a higher claim. The whole subject of war decorations will no doubt receive consideration at a later stage.

COMPANY MATTERS.

Arrol-Johnston, Ltd.

THE accounts of Arrol-Johnston state the year's profit for 1917 after deducting an unspecified interim dividend. On this basis there is an increase from £16,846 to £23,184, and the disposable sum was nearly £9,000 higher. The reserve appropriations are advanced from £10,231 to £32,255, so that, after repeating the balance dividend of 10 per cent., the carry-forward is reduced from £23,099 to £10,029. The debenture reserve fund is brought to £41,500, equal to half the total issue, and the general reserve to £50,000; money invested or lent to associated companies is £110,033.

Rolls-Royce, Ltd.

THE report of the directors for the year ended October 31st, 1917, states that the delay has been due to the time absorbed in assessing the values of the extensive capital expenditure undertaken to meet Government requirements. After paying or providing for all trading expenses, and liberal depreciation of buildings, machinery and plant, making due provision towards writing down to estimated post-war value, and depreciation of new buildings, machinery and plant erected and installed for munitions of war purposes, and after charging repairs and replacements to revenue, and making provision for the estimated amount payable under the Finance and Munitions of War Acts, the trading for the year has resulted in a net profit of £142,056 5s. 11d., as compared with £82,640 8s. 10d. for the previous year.

In accordance with resolutions passed at the meeting on March 22nd last, a dividend has been paid at the rate of 10 per cent. (less income tax) in respect of the year ended October 31st, 1917, and the capital of the company has been increased to £400,000; fully paid bonus shares have been issued at the rate of share per share out of accumulated profits.

The directors recommend that the balance of profits should be utilised as to £20,000 for the dividend of 2s. per share, subject to income tax, being 10 per cent. for the year paid on April 9th, 1918; transfer to income tax account, £45,000; to reserve fund, £50,000; transfer to war contingency account, £30,000; and carry forward to next year, £40,172 1s. 10d.

The company's energies continue to be fully absorbed in the production of munitions of war.

NEW COMPANIES REGISTERED.

BRITISH AND GENERAL AVIATION CONTRACTORS, LTD., 43-44, Lennox House, Howard Street, Strand, W.C.—Capital £2,000, in £1 shares. Under agreements with Société à Générale Imprese Aéronautiche of Milan, Italy, of the first part, the Société Générale d'Industries Aériennes, of Paris, of the second part.

DRAYCOTT ENGINEERING CO., LTD., 97, New Bond Street, W.1.—Capital £5,000, in £1 shares. Manufacturers of aircraft and components, electrical appliances, motor and general engineers, &c.

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CORRESPONDENCE.

"Accidents which should Not Happen."

[1964] May I, through your columns, thank Mr. Thorburn for having written his timely article on accidents that should not happen, and you for having published it? "Find the woman" is undoubtedly at the root of much unnecessary low "stunting." There is also the natural desire of new pilots to display their "mastery of the air" to their wondering parents. I rather fancy that they fail to realise that the mastery might not be very much in evidence if the engine failed at 50 ft. over the back garden. Most of us have gone through this stage of self-pride, I think. A really experienced and sane pilot does not do stunts in the just-to-see-how-low-I-can-do-it style over populous areas unless he is very sure of his engine, and even then his reputation for sanity may be doubted. At the seaside I know it is a great temptation to zoom over piers and promenades, but we cannot afford to risk men and machines in entertaining or frightening bomb-dodging aliens who, by the grace of the Home Office, still infest the land. However enthusiastic a pilot may be, he should preserve a certain level of sanity for the sake of the traditions of aviation as a safe means of travel. I am sure the more sensible type of pilot will appreciate your having given publicity to this matter.

Authors' Club, July 20th. CLARENCE WINCHESTER.

IMPORTS AND EXPORTS, 1917-1918.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25th, 1912; for 1912 and 1913, see "FLIGHT" for January 17th, 1914; for 1914, see "FLIGHT" for January 15th, 1915; for 1915, see "FLIGHT" for January 13th, 1916; for 1916, see "FLIGHT" for January 11th, 1917; and for 1917, see "FLIGHT" for January 24th, 1918.

	Imports.		Exports.		Re-Exportation.	
	1917.	1918.	1917.	1918.	1917.	1918.
	£	£	£	£	£	£
January...	10,842	49,402	67,033	24,765	—	—
February	9,479	51,941	26,512	13,545	6	—
March ...	11,158	47,930	58,517	11,451	—	1,000
April	21,141	33,342	21,151	10,815	—	—
May ...	6,877	942,866	59,713	67,224	—	—
June ...	2,670	864,296	14,647	35,658	—	—
	62,167	1,989,777	247,573	163,458	6	1,000

PUBLICATIONS RECEIVED.

Indexing: Technical and Trade Periodicals and Books. By Geo. E. Brown. London: The British Association of Trade and Technical Journals, Ltd., Sicilian House, Southampton Row, W.C.1. Price 10s. net.

Dyke's Automobile and Gasoline Engine Encyclopædia. 7th (Annual) Edition. By A. L. Dyke, E.E. S. G. Gillam, Richmond, Surrey. Price 21s. net.

The Flying Book. 1918 Edition. Edited by W. L. Wade. London: Longmans, Green and Co. Price 5s. net.

Aeronautical Patents Published.

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motors.

Applied for in 1917.

The numbers in brackets are those under which the Specifications will be printed and abridged, &c.

Published July 25th, 1918.

4,942. W. S. HOWELL. Stabilising devices. (116,907.)
8,805. J. D. ROOTS. Flying-machine. (116,914.)
9,608. W. H. KELLY. Flying-machines. (116,942.)
10,053 H. G. KING. Flying-boats. (116,951.)
13,301. BLACKBURN AEROPLANE AND MOTOR CO. and J. W. COPLEY. Attachment devices for wires, stays, &c. (116,984.)
13,892. F. SAGE AND CO. and N. A. T. N. FEARY. Inclination indicators. (116,990.)
15,659. BLACKBURN AEROPLANE AND MOTOR CO. and V. SOULTANIAN. Gripping or clamping devices or jigs. (117,008.)

Applied for in 1918.

The numbers in brackets are those under which the Specifications will be printed and abridged, &c.

Published July 25th, 1918.

236. B. E. MILMORE. Aeroplanes. (117,036.)

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